

**Systems Conveyance and Operations Program (SCOP)
Environmental Assessment
for
Activities within the National Park Service
Lake Mead National Recreation Area**

May 2008

National Park Service



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- Appendix B: Acronyms and Abbreviations

1.0 PURPOSE AND NEED

The Clean Water Coalition (CWC) is implementing the Systems Conveyance and Operations Program (SCOP). The SCOP will provide an alternate discharge location for wastewater effluent, which is currently discharged to Lake Mead through the Las Vegas Wash (Figure 1.0-1). Thorough impact analyses were conducted as part of the SCOP Environmental Impact Statement (EIS) process to identify potential impacts resulting from the construction and implementation of SCOP. However, modifications and additions to facilities located within the Lake Mead National Recreation Area (LMNRA) were identified during final design activities. The purpose of the Proposed Action, which is analyzed in this Environmental Assessment (EA), is to provide facilities and infrastructure that support SCOP during construction and/or operation. The Proposed Action is needed to successfully construct and operate SCOP while minimizing the impacts to the LMNRA and visitors.

Details regarding the Proposed Action being analyzed in this EA are provided in Chapter 2. Relevant information from the SCOP EIS will be incorporated by reference into this EA to the extent possible. Figure 1.0-2 details the Proposed Action and location of each component. The components of the Proposed Action include:

- expansion of the hydroelectric/pressure regulating station (HPRS) site,
- a construction staging area,
- excavated material stockpiles,
- the expansion of the Pyramid Island Causeway,
- a high density polyethylene (HDPE) pipe fabrication facility,
- two temporary haul roads,
- electrical ductbanks,
- an alternate boat ramp, and
- a North River Mountains Tunnel 3 (NRMT3) temporary staging area.

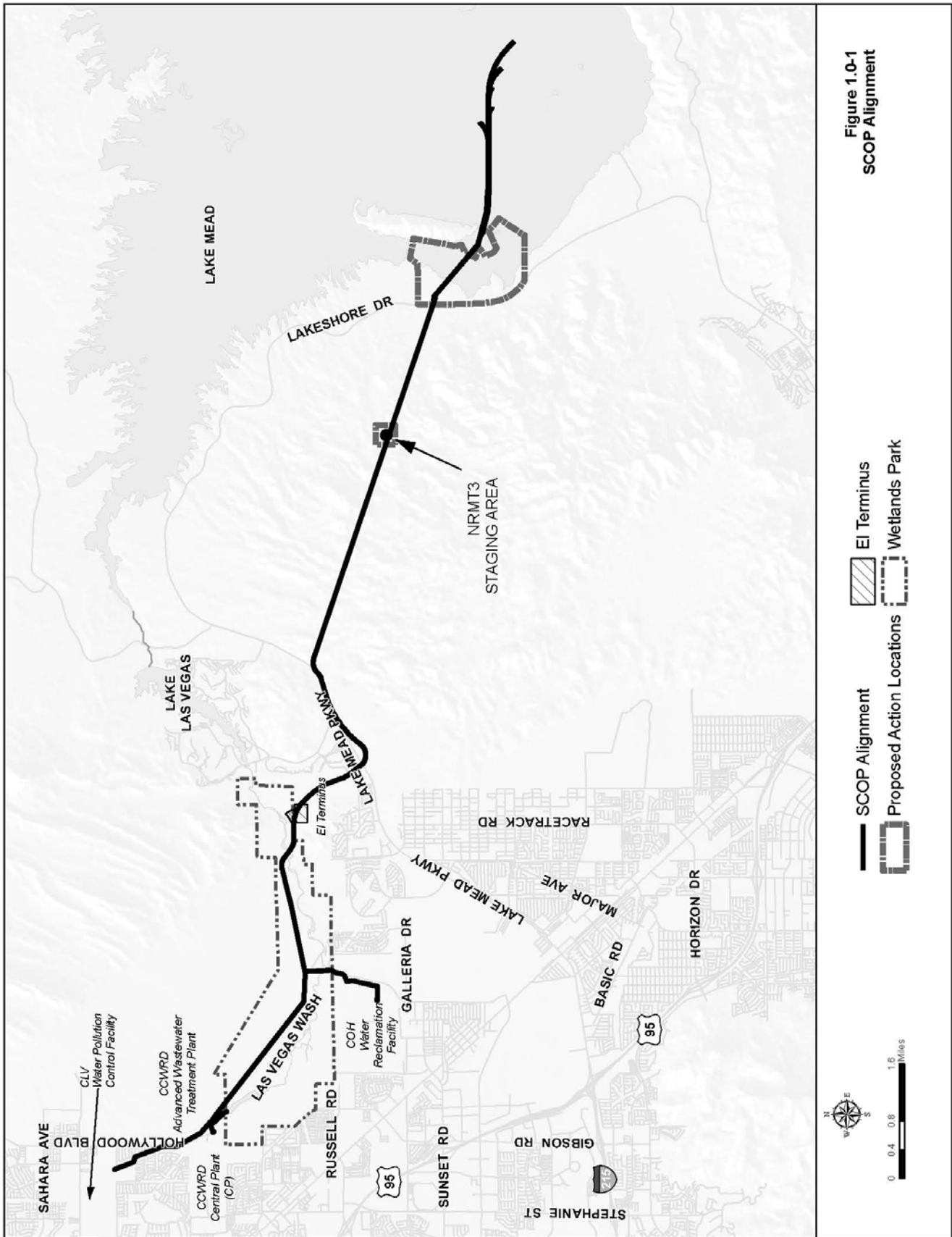
The purpose and need for each component is described in the following paragraphs.

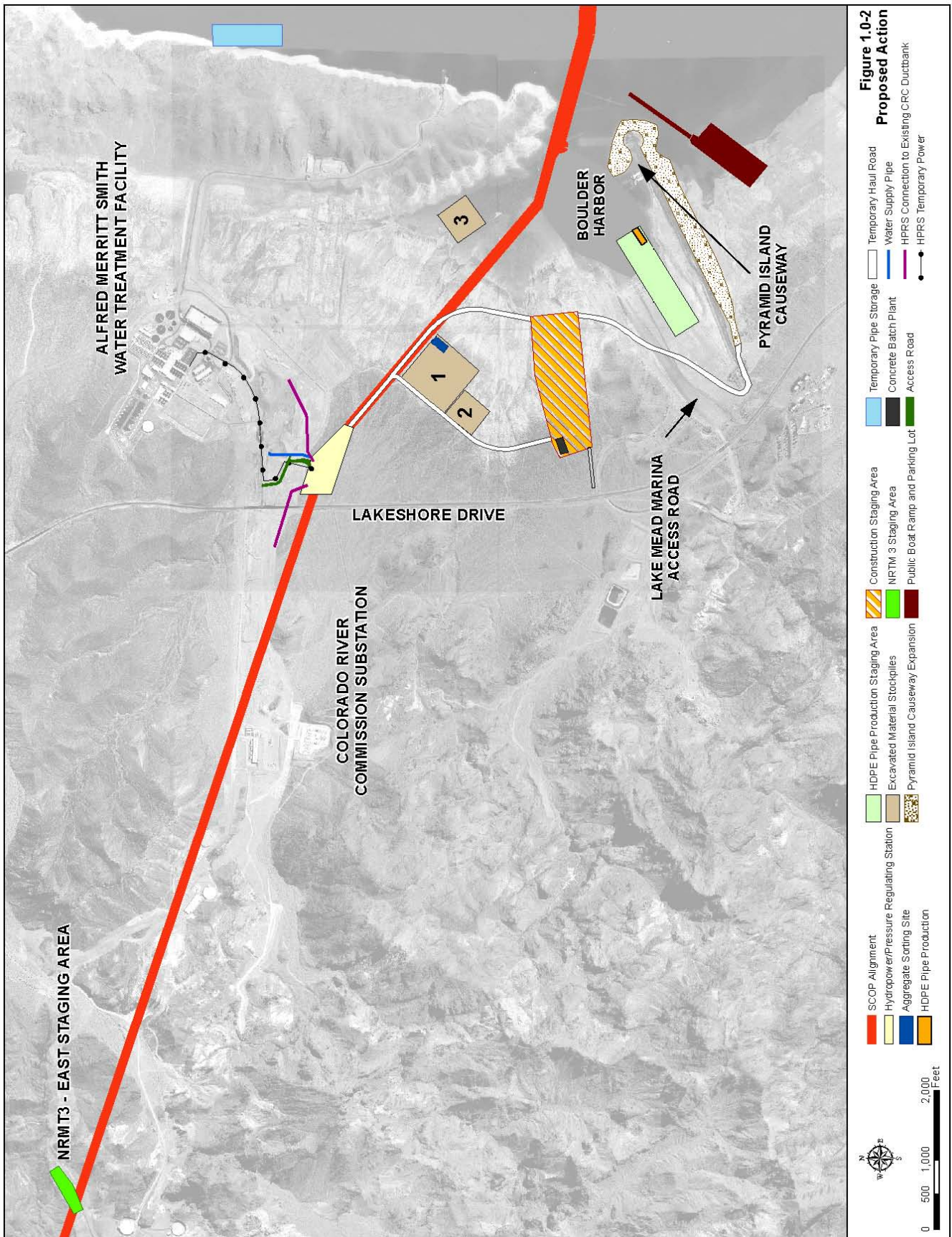
Expansion of the Hydroelectric Facility Site

A 5-acre site for the HPRS was analyzed in the Final SCOP EIS. The need for an additional 5 acres for the HPRS site was identified during final design. A total of 10 acres is required to provide the contractors constructing the NRMT3 and the HPRS sufficient area to conduct the work (Figure 1.0-2). The additional 5 acres would be used during construction activities. Access to the HPRS site would be limited to areas already identified as disturbed as part of the construction of the downstream pipeline. The construction methods for the NRMT3 and HPRS will require significant support operations including cranes, portable electric generators, and areas to store materials. Construction activities for the NRMT3 and HPRS, and storage of equipment would be within the 10-acre site.

Electrical Ductbank and Underground Utility Lines

Electrical power generated at the HPRS would be provided to Colorado River Commission (CRC) facilities that serve the Alfred Merritt Smith Water Treatment Facility (AMSWTF). Underground power lines would be needed to distribute the power from the HPRS to the AMSWTF and other facilities in the area. Two additional utility lines would be needed to provide treated water and communications to the HPRS.





Construction Staging Area at the Ferry Site (construction trailers, concrete batch plant, construction-worker parking)

A considerable amount of SCOP construction activities are planned for the area between the AMSWTF and Pyramid Island Causeway (Figure 1.0-2). Therefore, a nearby construction staging area is necessary to store equipment and materials, house construction trailers, and provide a parking area for construction workers. Additionally, a concrete batch plant would be located at the construction staging area. Concrete needed for the project would be prepared and distributed onsite, which would minimize the number of trucks accessing the construction area. An onsite concrete batch plant is desirable because concrete quality diminishes when the concrete has been mixed for more than 60 minutes. Concrete suppliers at “permanent” batch plants are located at long distances from the construction area. Locating a concrete batch plant at the Construction Staging Area would minimize concrete-quality issues and assure adequate supply of concrete for SCOP. Additionally, during the summer months, it may be desirable to place concrete during the evening and night when outside temperatures are cooler. An onsite concrete batch plant would mitigate the need for concrete truck traffic on Lakeshore Drive.

Excavated Material Stockpiles

A large volume of material would be excavated during construction of SCOP. This material would need to be stored during construction activities until it could be used as backfill. Three separate areas are needed for stockpiling of excavated materials. Area 1 would be needed to store the excess spoils from the NRMT3. Area 2 would be needed to store the top 4 inches of soil, which would need to be kept separate from all other excavated materials. The top 4 inches of material (topsoil) would be used during restoration once construction of SCOP is complete. Finally, Area 3 would be needed to temporarily store the wet spoils that would be excavated from the dredged segment of the pipeline. Dredged material would be dried at this location and then transported to Area 1 for longer-term storage. The excavated material stockpiles would be used to store spoils administered by multiple agencies. Stockpiling excavated material onsite would reduce the amount of construction traffic on Lakeshore Drive.

Temporary Haul Roads

To minimize construction traffic on Lakeshore Drive, two temporary haul roads within the construction area would be needed for access to the various construction sites. These haul roads would be used by all construction staff to avoid using Lakeshore Drive. Two temporary haul roads are shown on Figure 2.1-3 to facilitate traffic moving to and from the construction staging area at the Ferry Site.

HDPE Pipe Fabrication Plant

Approximately 60,000 feet (ft) of HDPE pipe is needed for the subaqueous segment of the SCOP diffuser pipeline. HDPE is a non-toxic pipe material that has been approved by the American Water Works Association to convey potable water and meets the requirements of NSF Standard 61: safety standards for drinking water components. If the HDPE were made off site, the HDPE sections would have to be delivered to the site by truck. In order to accommodate transportation by truck the length of each piece would be limited to 50 ft with each piece weighing approximately 12,500 pounds. Delivery of the required pipe material to the site could require up to 1,200 separate trucks. Fabricating the HDPE pipe on site would greatly reduce the number of trucks accessing the construction area to approximately 400 trucks. Pipe segments would be stored along Saddle Island north of Southern Nevada Water Authority's (SNWA's) intakes 1 and 2 until installation of the Lake diffuser pipeline.

A second issue is the welding of the HDPE pipe. If the HDPE pipe is delivered to the site in 50-ft pieces, approximately 1,200 welds would be required to fabricate the 60,000 ft of pipeline. Extruding the HDPE pipes at a location near Lake Mead would allow the pipe to be produced in lengths of 1,000 to 2,000 ft. This reduces the number of welds to approximately 40. Minimizing the number of welds enhances quality and expedites pipe production. The production of pipe earlier in the construction schedule could shorten

the overall installation from the estimated four work seasons (October 1 through March 31) to as few as two work seasons.

Alternate Public Boat Ramp

A boat ramp south of the Pyramid Island Causeway would be needed to replace the existing ramp at Boulder Harbor should use of the existing ramp be suspended during construction activities. Installing an alternate ramp near the south side of Pyramid Island Causeway would provide an alternate boat ramp away from construction activities to protect the public. Additionally, construction of an alternate boat ramp using excess material from tunneling operations would be a beneficial use of spoils.

NRMT3 Temporary Staging Area

The NRMT3 staging area would be located as shown on Figure 1.0-2. The NRMT3 staging area would be needed to provide ventilation and utilities/materials access to the tunnel during construction.

Expansion of the Pyramid Island Causeway

The expansion of the Pyramid Island Causeway would provide added protection to Boulder Harbor. Additionally, widening the causeway would improve access and safety along the Causeway.

1.1 Purpose and Need for Federal Action

This EA is prepared in compliance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) *Regulations for Implementing the Procedural Provisions of NEPA*. The Proposed Action analyzed in this EA traverses lands administered by the National Park Service (NPS). Therefore, the CWC would need to obtain a right-of-way (ROW) permit that allows the construction and operation of the SCOP on NPS administered land. The issuance of federal permits is a federal action and requires NEPA compliance. The NPS is the lead agency for the preparation of this EA. The NEPA requires federal agencies to consider the environmental consequences of all proposed actions in their decision-making process. The CEQ was established under NEPA to implement and oversee federal policy in this process.

1.2 SCOP Project History

The CWC, which is comprised of the four agencies currently responsible for wastewater treatment in the Las Vegas Valley: the City of Las Vegas (CLV), the City of North Las Vegas (CNLV), the City of Henderson (COH), and Clark County Water Reclamation District (CCWRD), proposed to implement the SCOP. The SCOP will provide an alternate discharge location for the member agencies' wastewater effluent, which is currently discharged to Lake Mead through the Las Vegas Wash. The purpose of implementing SCOP is to maintain water quality standards and NPS recreational and resource values throughout the LMNRA by operating a system that allows for flexible management of wastewater flow from the Las Vegas Valley to Lake Mead while protecting and maximizing Nevada's return flow credits and future augmentation credits.

The SCOP includes activities and infrastructure that would be located on lands owned or managed by the CLV, CNLV, COH, Clark County, Bureau of Reclamation Lower Colorado Region (Reclamation), NPS, and the U.S. Bureau of Land Management (BLM), all within Clark County, Nevada. The location of the SCOP alignment and facilities is shown on Figure 1.0-1.

The NPS and Reclamation prepared the SCOP EIS as joint-lead federal agencies. Each lead agency issued a Record of Decision (ROD) pertaining exclusively to actions under the authority of that agency. The NPS ROD (NPS 2007a), issued on July 5, 2007 stated that:

After thorough analysis and with due consideration for public involvement, the NPS has determined it will issue a right-of-way permit to the CWC to construct and operate the Boulder Islands North Alternative within the Lake Mead National Recreation Area (LMNRA). The selected action is the same as the environmentally preferred alternative presented in the Final EIS, which is the Boulder Islands North Alternative. The Boulder Islands North Alternative includes the use of current, conventional treatment processes, plant optimization, increased treatment, and a pipeline to convey highly treated effluent from the three treatment facilities to an alternate discharge location near the Boulder Islands in Lake Mead.

Modifications and additions to SCOP facilities within the LMNRA were identified during the final design activities. These modifications and additions are the Proposed Action which is analyzed in this EA.

1.3 Related Laws Policies and Other Management Documents

The following federal, state, and local statutes, regulations, management plans, and studies are relevant to the proposed project.

1.3.1 Servicewide and Park-specific Legislation and Planning Documents

The NPS Organic Act (16 United States Code [USC] § 1) directs the NPS to manage units “to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such a manner as will leave them unimpaired for the enjoyment of future generations.” Congress reiterated this mandate in the Redwood National Park Expansion Act of 1978 by stating that the NPS must conduct its actions in a manner that will ensure no “derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress.” (16 USC § 1 a-1). The Organic Act prohibits actions that permanently impair park resources unless a law directly and specifically allows for the acts. An action constitutes an impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources and values.”

National Park Service Management Policies 2006 requires the analysis of potential effects of each alternative to determine if actions would impair park resources. To determine impairment, the NPS must evaluate “the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts.” The NPS must always seek ways to avoid or minimize, to the greatest degree practicable, adverse impacts on park resources and values. However, the laws do give the NPS management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment to the affected resources and values.

National Park Service units vary based on their enabling legislation, natural and cultural resources, missions, and the recreational opportunities appropriate for each unit, or for areas within each unit. The enabling legislation for LMNRA established the recreation area “for the general purposes of public recreation, benefit, and use, and in a manner that will preserve, develop and enhance, so far as practicable, the recreation potential, and in a manner that will preserve the scenic, historic, scientific, and other

important features of the area, consistent with applicable reservations and limitations relating to such area and with other authorized uses of the lands and properties within such area.” An action appropriate at the LMNRA, as designated by the enabling legislation, may impair resources in another unit. This EA analyzes the context, duration, and intensity of impacts related to the Proposed Action, as well as the potential for resource impairment, as required by Director’s Order 12, *Conservation Planning, Environmental Impact Analysis and Decision Making*.

The 1986 *General Management Plan* provides the overall management direction for the recreation area. The plan emphasizes long-term protection of park resources while accommodating increasing visitor use. It allows for increasing use through a combination of providing developed areas, improved access points, and acceptable levels of expansion in existing developed areas. It establishes land-based management zones and strategies for meeting the goals and general purposes of the recreation area.

1.3.2 Other Related Laws, Policies, and Planning Documents

The *National Environmental Policy Act* (NEPA) of 1969 establishes national policy, sets goals, and provides the means to prevent or eliminate damage to the environment. The NEPA procedures ensure that information about environmental impacts is available to public officials and citizens before decisions are made on major federal actions that may significantly affect the environment. The CEQ regulations implement the procedural provisions of NEPA.

The *Protection and Enhancement of Environmental Quality* (Executive Order [EO] 11514) sets the policy for directing the federal government in providing leadership in protecting and enhancing the quality of the nation’s environment.

The *Clean Air Act* (CAA) of 1970 establishes federal policy to protect and enhance the quality of the nation’s air resources to protect human health and the environment (42 USC 7401 et seq.; 42 USC 1857h-7 et seq; Public Law [PL] 91-604). The CAA sets national primary and secondary ambient air quality standards as a framework for air pollution control.

The *Clean Water Act* (CWA) establishes federal limits, through the National Pollutant Discharge Elimination System (NPDES), on the amounts of specific pollutants that are discharged to surface waters in order to restore and maintain the chemical, physical, and biological integrity of the water as established by ambient water quality standards.

The *Endangered Species Act* (ESA) of 1973 requires federal agencies that authorize, fund, or carry out actions to avoid jeopardizing the continued existence of endangered or threatened species, and to avoid destroying or adversely modifying their critical habitat (16 USC 1531 et seq; PL 93-205). Federal agencies must evaluate the effects of their actions on endangered or threatened species of fish, wildlife, and plants, and their critical habitats, and take steps to conserve and protect these species. All potentially adverse impacts to endangered and threatened species must be avoided or mitigated.

The *Migratory Bird Treaty Act* (MBTA) of 1918, as amended [16 USC 703 et. seq.], provides for the protection of migratory birds and prohibits their unlawful take or possession. In addition, EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, was signed by President Clinton in 2001. This EO directs federal agencies to include impacts to migratory birds in their NEPA analyses.

The *National Historic Preservation Act* (NHPA) of 1966, as amended, requires federal agencies to take into account the effects of their undertakings on historic properties, and to afford the Advisory Council on Historic Preservation an opportunity to comment with regard to such undertaking (16 USC 470a et seq. 80 Stat. 915; PL 89-665). Implementing regulations for Section 106 of the NHPA are found at 36 Code of

Federal Regulations (CFR) 800 and outline the process agencies are to follow when evaluating the effects of their undertakings on historic properties and when resolving effects to such properties. Historic properties are defined in the *Protection of Historic Properties Act* of 1986 (36 CFR 800.16[1][1]) as "... any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places...."

The *Archaeological Resources Protection Act* (ARPA) of 1979, as amended, and its implementing regulations establish a procedure for permitting the recovery of information from archaeological sites, and authorize and establish civil and criminal penalties for intentionally or inadvertently damaging an archaeological site without a permit (16 USC 470aa-470mm. 93 Stat. 721; 43 CFR 7; PL 96-65).

The *Noise Control Act* of 1972 establishes a policy to promote an environment free from noise that is harmful to the health or welfare of people (42 USC 4901; PL 92-574). Federal agencies comply with state and local requirements for the control and abatement of environmental noise, where applicable.

The BLM *Las Vegas Resource Management Plan* (1998) identifies future management direction for 3.3 million acres of public land in Clark and Nye counties, Nevada. The BLM must comply with the Resource Management Plan when considering the lease, sale, or transfer of mineral materials.

The *Mineral Materials Program Act* of 1947 authorizes the Secretary of the Interior to dispose of mineral and vegetative materials from public lands. This act authorizes the BLM to give mineral materials to other governmental agencies without charge.

1.4 Impact Topics Identified for Further Analysis

A 30-day public scoping period occurred from October 13, 2007 through November 15, 2007. No scoping comments were received during this period; therefore, there was no public input into the topics selected for further analysis. The following relevant topics are analyzed in the EA.

Public Safety and Experience, and Park Operations

Safety of visitors, NPS and concession employees, and construction personnel is important to the NPS and the CWC. The Proposed Action may have an impact on safety, visitor use and experience, and park operations. Therefore, public safety and experience, and park operations will be evaluated further in this document.

Geology, Topography, and Soils

Soils would be disturbed in the project area. Construction-related earthmoving activities could affect soils or alter local topography. Construction activities would occur on previously disturbed and undisturbed land.

Water Resources

Construction activities would cross several ephemeral washes. Construction activities in the washes could temporarily increase sediment in the project area and downstream from the areas of activity. The addition of culverts and/or bridges could moderate water flows in the washes and decrease erosion. Construction activities could also occur below the ordinary high water mark of Lake Mead.

Biological Resources

Construction activities would affect vegetation. The area does not provide high quality wildlife habitat; however, small mammals, reptiles, and birds that inhabit the area could be disturbed or displaced during construction. Threatened, endangered, or other special status species in or near the project area could be affected during construction. The Proposed Action would occur in desert tortoise habitat.

Air Quality

Airborne particulates could increase in the area during construction. The intermittent dust created by construction activities could compromise air quality and temporarily decrease visibility in the project area. Exhaust from construction equipment could temporarily impact air quality in the project area.

Noise

Construction-related noise could temporarily disturb sensitive receptors in the project area.

Cultural Resources

Both prehistoric and historic cultural resources are located in the Boulder Basin. Sensitive cultural resources are located in the vicinity of the Proposed Action. Construction could have an impact on several of these resources.

Visual Resources

The Proposed Action would occur in a high-use area of the LMNRA. The facilities and infrastructure of the Proposed Action could detract from the natural setting.

Utilities

Infrastructure related to utilities is prevalent in the area of the Proposed Action. Site-specific utilities were not analyzed in the SCOP Final EIS. However, addressing the potential effects to existing utilities is an NPS requirement for NEPA documents. Therefore, this EA includes a discussion about potential impacts to existing utilities.

Traffic

Increased construction traffic in the vicinity of Lakeshore Drive could result in traffic delays for LMNRA visitors.

1.5 Impact Topics Dismissed from Analysis

A 30-day public scoping period occurred from October 13, 2007 through November 15, 2007. No scoping comments were received during this period; therefore, there was no public interest into the topics that were dismissed from further analysis. The following topics are not further addressed in this document because there are no potential effects to these resources, which are not in the project area.

- Designated ecologically significant or critical areas
- Wetlands
- Floodplains
- Designated coastal zones
- Indian Trust Resources
- Prime and unique agricultural lands
- Sole or principal drinking water aquifers

In addition, there are no potential conflicts between the project and land use plans, policies, or controls (including state, local, or Native American) for the project area. Neither the No Action alternative nor the Proposed Action would appreciably affect local businesses outside the LMNRA, therefore a discussion on the socioeconomic environment was dismissed from analyses.

There are no potential effects to local or regional employment, occupation, income changes, or tax base as a result of this project. The project area of effect is not populated and, per EO 12898 on Environmental Justice, there are no potential effects on minorities, Native Americans, women, or the civil liberties (associated with age, race, creed, color, national origin, or sex) of any American citizen. No disproportionate high or adverse effects to minority populations or low-income populations are expected to occur as a result of implementing any alternative.

Impacts to groundwater were analyzed in the SCOP Final EIS. No changes will occur to groundwater resources from implementation of the Proposed Action. Therefore, groundwater will not be further analyzed in this EA.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND NO ACTION ALTERNATIVES

This section describes the Proposed Action and No Action Alternative. The alternatives described include mitigation measures and monitoring activities proposed to minimize or avoid environmental impacts.

2.1 Proposed Action Alternative

As described in Chapter 1, the CWC proposed to implement SCOP, which would provide an alternate discharge location for the Las Vegas Valley's highly treated effluent. The NPS and Reclamation prepared the SCOP EIS as joint-lead federal agencies, and conducted thorough impact analyses. However, additional facilities and infrastructure needed for the construction and operation of SCOP were identified during design activities. The additional proposed facilities and infrastructure, which are the Proposed Action, include the expansion of the HPRS site, electric ductbanks, a construction staging area, excavated materials stockpiles, two temporary haul roads, an HDPE pipe fabrication facility, an alternate public boat ramp, an NRMT3 staging area, and the expansion of the Pyramid Island Causeway (Figure 1.0-2). In addition to the disturbance analyzed in the SCOP Final EIS, the Proposed Action would disturb approximately 101 acres of land during construction activities.

2.1.1 HPRS Site

The HPRS site would be located east of Lakeshore Drive and south of the access road to SNWA's AMSWTF (Figure 2.1-1). The HPRS site would contain the HPRS building, a 900 square ft parking area, and an electrical switchyard. The HPRS building would be 80-ft wide by 200-ft long by 24-ft high. The building would be designed architecturally to blend with the surroundings (Figure 2.1-2).

The HPRS building would contain a restroom. Therefore, a septic field would be needed. The septic field, or leachfield, would be located above the high Lake level near the HPRS building, and would consist of an underground, small-diameter perforated pipe that allows liquids to leach into surrounding soils. The surrounding soils would absorb the small quantity of wastewater generated from the HPRS restroom.

A level area, approximately 24 ft by 65 ft at elevation 1,263 ft would be located at the eastern end of the HPRS building. The area would allow vehicular access into the building for delivery and removal of equipment from the structure. The ramp would be designed to allow a low-boy trailer to enter the structure for maintenance and equipment removal and delivery.

The parking area would be located on the north side of the HPRS building as shown in Figure 2.1-1. A temporary chain-link fence would enclose the HPRS site until construction activities are complete.

The electrical switchyard would be located adjacent to the west side of the HPRS building (Figure 2.1-1). It would encompass an area of approximately 155 ft by 230 ft. The switchyard would be enclosed by a 24-ft-high masonry wall. The majority of the switchyard equipment and facilities would be concealed by the wall. However, five 50-ft high lightening rods would be visible above the wall. The external face of the wall would receive the same architectural treatment as the HPRS building to blend with the surroundings. There would be three entrances to the switchyard to allow maintenance activities and the installation and removal of equipment.

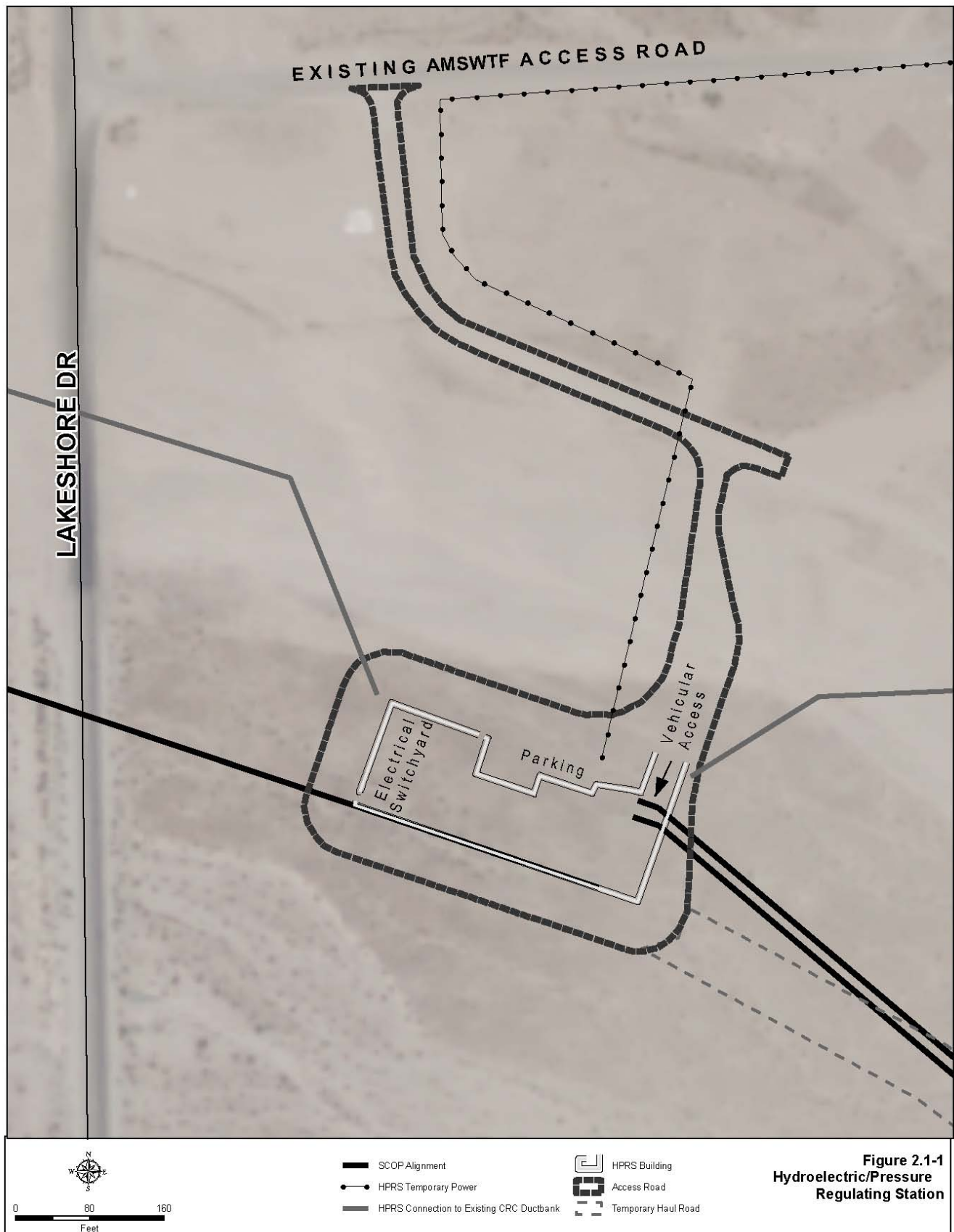


Figure 2.1-1
Hydroelectric/Pressure
Regulating Station

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Figure 2.1-2 Architectural Rendering of the Switch Gear Area and Hydroelectric/Pressure Regulating Station

Buried power lines in a concrete ductbank would extend from the HPRS to an existing ductbank owned by the CRC. The ductbank would originate at the HPRS and run north to an underground CRC ductbank within a previously disturbed corridor (Figure 1.0-2).

Additionally, construction of the NRMT3 and HPRS would require temporary electric power. The powerlines for this activity would begin at the existing CRC sub-station located approximately 1.04 miles to the northwest of the NRMT3 and HPRS construction area. The powerlines would be located in an underground ductbank within a previously disturbed corridor (Figure 1.0-2). The temporary power would be used for the duration of the NRMT3 and HPRS construction (approximately 42 months). The HPRS working area would encompass 10 acres during construction. Once construction activities are complete, the HPRS site would be reduced to approximately 5 acres of permanent disturbance.

A ten-acre site will be used during construction of the HPRS. Five acres of this would become the permanent HPRS facility and the other five acres would be used during construction for staging and equipment storage. Upon completion of construction at the HPRS site, the five-acre staging site and the Temporary River Mountains Loop Trail would be removed and the land restored to preconstruction conditions. Additionally the permanent River Mountains Loop Trail would be constructed using the original NPS-approved alignment. The potential impacts resulting from the construction of the temporary and permanent River Mountains Loop Trails were analyzed in a separate NEPA document.

2.1.2 Electrical Ductbank

Buried power lines in a concrete ductbank would extend from the HPRS to an existing ductbank owned by the CRC. The powerlines would originate at the HPRS and run northwest and northeast to an underground CRC ductbank within a previously disturbed corridor (Figure 1.0-2). The alignment of this ductbank crosses several existing utilities. Two additional utility lines (treated water and communications) would run from the AMSWTF site to the HPRS.

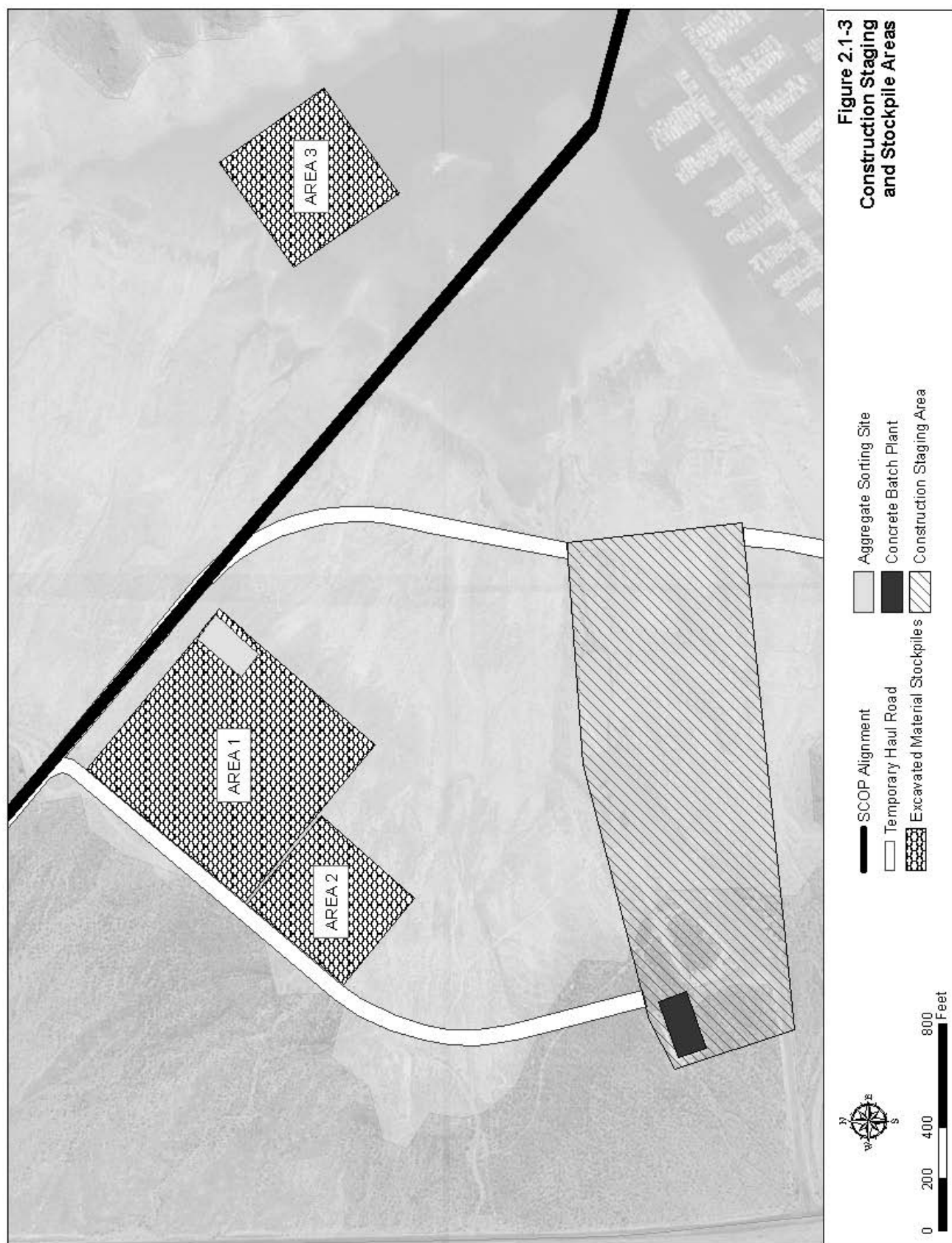
2.1.3 Construction Staging Area

A 30-acre Construction Staging Area would be located at the old Ferry Site as shown on Figure 2.1-3. Much of the area is paved and utilities are currently on site. The Construction Staging Area would include a contractor staging area, a concrete batch plant, temporary access roads, and utilities.

The Construction Staging Area would be used during construction of the HPRS, NRMT3, and Lake Diffuser pipeline. The staging area would be used to store construction equipment and supplies, locate temporary office (trailer) facilities, and provide parking for construction workers. A temporary chain-link fence would enclose the Construction Staging Area until construction activities are complete.

Existing utilities (electric power and water) would be used to support the construction and office activities within the Construction Staging Area. Additionally, there are existing gasoline and diesel storage tanks used for fuel located at the west end of the Pyramid Island Causeway (Figure 2.1-4). These tanks would be used for fuel storage during construction activities. The use of the onsite tanks would reduce the number of trucks entering the site by one or two trucks per day because fuel delivery would not be required every day.

A concrete batch plant would be located at the Construction Staging Area. Concrete for the project would be prepared and distributed onsite. An onsite concrete batch plant would minimize the need for concrete truck traffic on Lakeshore Drive. Existing onsite power would be used to the extent possible. However, the concrete batch plant may require an onsite generator for supplemental power.



Construction vehicles would use existing paved and unpaved roads to access the Construction Staging Area. The existing roads currently connect to Lakeshore Drive, and all construction vehicles would use these existing roads to access the staging area. Additionally, one temporary unpaved access road would begin at the Construction Staging Area and connect with the NRMT3 and HPRS construction area (Figure 2.1-3). A second temporary unpaved access road would begin at the Construction Staging Area and proceed southwest as shown on Figure 2.1-3. All construction traffic between the Construction Staging Area, NRMT3 and HPRS site, and Pyramid Island Causeway would use the two 60-ft (18.28 m) wide roads. The roads would be in place for up to 48 months during construction activities.

Once construction of SCOP is completed, the road and the Construction Staging Area would be graded to preconstruction conditions and restored in accordance with an NPS-approved restoration plan. Additionally, the man-made improvements at the old Ferry Site would be removed. Existing utilities would be capped and buried with a manhole for future access. The site would be graded to match general contours of the surrounding land.

2.1.4 Excavated Material Stockpiles

Three locations would be used to stockpile excavated material (Figure 2.1-3). Excavated material stockpile areas located within the project area may also be used to store spoils from SCOP construction activities that occur on BLM or Reclamation land. Storage of spoils authorized by a BLM free use permit, and use of the spoils for beneficial uses within the LMNRA are consistent with the Las Vegas Resource Management Plan.

Area 1 would be used to stockpile the material excavated as part of the NRMT3 construction. Area 1 would be approximately 800 ft by 800 ft. Over 400,000 cubic yards (CY) of material may be stockpiled at this location. The area would be used for storage of the stockpile materials for up to 3 years. Once the material is removed, the area would be graded to preconstruction conditions and restored in accordance with an NPS-approved restoration plan.

An aggregate sorting site would be located within Area 1 (the spoils stockpile area). An aggregate screener would be used to sort the materials that are excavated during construction of SCOP. The sorted materials would then be used as backfill for SCOP or other projects located within the LMNRA. The purpose of having the aggregate sorting site within the Proposed Action area is to reduce the number of haul trucks that would be required to transport materials to and from the site using Lakeshore Drive.

Area 2 would be used to stockpile topsoil material. The topsoil would be excavated from various project locations and stored in Area 2 until it is used during restoration activities. Area 2 would be approximately 450 ft by 450 ft and approximately 44,000 CY of topsoil material may be stored at this location. Once the material is removed, the area would be graded to preconstruction conditions and restored in accordance with an NPS-approved restoration plan.

Area 3 would be used to temporarily store wet spoils from the dredged segment of the pipeline. Area 3 would be approximately 500 ft by 500 ft and approximately 16,000 CY of wet material may be stored for drying at this location. Once the material is dry, it would be transported to Area 1 for longer-term storage.

All excavated material stockpile areas would be removed once construction of SCOP is complete and the areas would be restored or rehabilitated to pre-construction conditions in accordance with an NPS-approved restoration plan.

2.1.5 Temporary Haul Roads

The temporary haul roads within the construction area would be constructed to provide access to the various construction sites (Figure 1.0-2). These temporary haul roads would be 60-ft (18.28-m) wide gravel or crushed-rock roads. Dust-control measures would be used to minimize air quality impacts. These haul roads would be used by all construction staff to avoid using Lakeshore Drive. Once construction is complete, the area would be graded to preconstruction conditions and restored in accordance with an NPS-approved restoration plan.

2.1.6 HDPE Pipe Fabrication Facility

The HDPE Pipe Fabrication Facility would be located within the HDPE Pipe Production Staging Area near the waters edge of Lake Mead north of the Pyramid Island Causeway as shown in Figure 2.1-4. The Pipe Production Staging Area would be approximately 20 acres. Pipes would be extruded in a mobile production facility for approximately 15 months. Pipes would be floated onto the Lake surface and securely anchored along Saddle Island (Figure 1.0-2) until pipe installation begins in October 2009. Existing onsite power would be used to the extent possible. However, the HDPE Pipe Fabrication Facility may require an onsite generator for supplemental power. Potable water would be connected to the HDPE Pipe Fabrication Facility through an existing water line. All waste material created during the manufacture of the HDPE pipe would be transported off site. Once construction of SCOP is complete the HDPE pipe fabrication facility and pipe production staging area would be removed and then graded to preconstruction conditions and restored in accordance with an NPS-approved restoration plan.

2.1.7 Alternate Public Boat Ramp

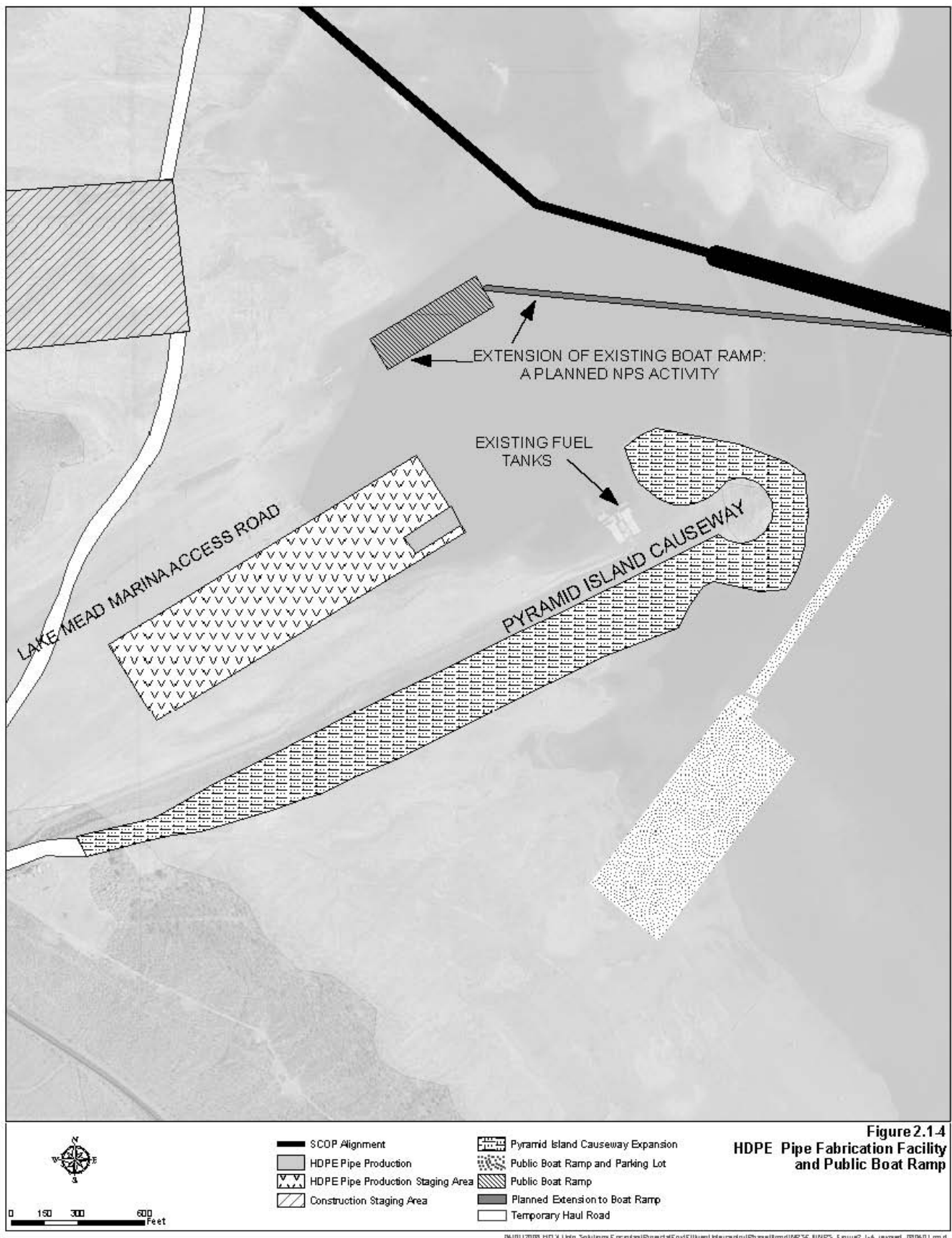
An alternate public boat ramp would be located south of the Pyramid Island Causeway to duplicate the existing ramp at Boulder Harbor should use of the existing ramp be suspended during construction activities (Figure 2.1-4). The alternate boat ramp would be built to an elevation of 1,050 ft and would be approximately 2,000-ft long and 100-ft wide. A gravel parking lot would be constructed near the boat ramp. The area of the boat ramp and parking lot would be approximately 10 acres. The boat ramp would be constructed using spoils and rock from the NRMT3. If constructed, the boat ramp would be maintained as a low-water launching area by the NPS after construction of SCOP is complete.

The existing public boat ramp at Boulder Harbor would be extended to 1,080-ft elevation once construction of the SCOP facilities is complete. Extension of the existing boat ramp is an NPS action not covered in this EA.

2.1.8 NRMT3 Temporary Staging Area

The NRMT3 Temporary Staging Area would be 3 acres in size and located as shown on Figure 1.0-2. This area would be used during construction of the NRMT3 to provide a temporary access shaft to the tunnel construction below. The shaft would provide assistance with the tunnel ventilation and allow materials to be efficiently placed into the tunnel during construction.

Activities at the temporary staging area for NRMT3 would include excavation of the shaft, installation of ventilation equipment, and maintenance activities required for the equipment. The materials placed into the tunnel would include concrete material for grouting the tunnel lining and miscellaneous ancillary materials. All equipment and materials would be removed from the area and the area would be restored upon completion of the NRMT3. The area would be assessable by existing unimproved roads throughout the duration of the NRMT3 construction. Once construction of SCOP is complete the NRMT3 staging



area would be removed and graded to preconstruction conditions and restored in accordance with an NPS-approved restoration plan.

2.1.9 Pyramid Island Causeway Expansion

Spoils from the NRMT3 would be used for beneficial purposes within the LMNRA. The use of the spoils to expand the Pyramid Island Causeway is one such use. The expansion of the Pyramid Island Causeway would provide added protection to Boulder Harbor. Additionally, widening the causeway would improve access and safety along the Causeway. Spoils would be transported from stockpile storage Area 1 and deposited along the Pyramid Island Causeway as shown in Figure 2.1-4.

The use of spoils that originate on BLM land for beneficial purposes on NPS land is authorized by the Las Vegas Resource Management Plan (1998a) as a transfer of materials under a free use permit.

2.2 No Action Alternative

The No Action Alternative would be the construction and implementation of the Environmentally Preferred Alternative as described in the SCOP Final EIS and the NPS ROD, which was issued on July 5, 2007. Approximately 33 acres of land would be disturbed during construction activities associated with the No Action Alternative.

2.2.1 HPRS Site

The HPRS site would be located, constructed, and designed as indicated in the SCOP Final EIS. The HPRS building and ancillary facilities, as described in Section 2.1.1 of this EA, would be located within the 5-acre site analyzed in the Environmentally Preferred Alternative in the SCOP Final EIS. All temporary and permanent disturbance associated with the HPRS would be located within the 5-acre site (Figure 2.2-1). This would mean the NRMT3 project would have to be completed before construction could begin at the HPRS because this smaller area would not allow both contractors to operate simultaneously. This would add approximately 2 to 2.5 years to the overall construction schedule and construction of SCOP. Under the No Action Alternative construction of SCOP would be completed in 2014 or 2015. Under the Proposed Action for this EA, construction of SCOP would be completed in 2012.

2.2.2 Construction Staging Areas

A small Construction Staging Area would be located on already disturbed land at the old Ferry Site as shown on Figure 2.2-1. Much of the area is paved and utilities are currently on site. Existing paved and unpaved roads would be used to access the area. These roads currently connect to Lakeshore Drive, and all construction vehicles would use these existing roads to access the Construction Staging Area and other construction sites. No new haul roads would be graded. The Construction Staging Area would be sized for minimal storage and staging activities. The site would accommodate a contractor staging area, and utilities. The Construction Staging Area would be restored after construction of SCOP was complete.

The Construction Staging Area would be used during construction of the HPRS, RMT3, and Lake Diffuser pipeline. The staging area would be used to store construction equipment and supplies, locate temporary office (trailer) facilities, and provide parking for construction workers. A concrete batch plant would not be located within the construction staging area. Concrete needed for the project would be trucked to the site from batch plants outside of the LMNRA. This would increase the amount of construction-related traffic on Lakeshore Drive.



2.2.3 Excavated Material Stockpiles

Three locations would be used to stockpile excavated material as described in Section 2.1.4.

2.2.4 HDPE Pipe Fabrication Facility

The HDPE Pipe Fabrication Facility would not be located within the LMNRA. Pipe for the project would be produced at an off-site facility and delivered by truck to the construction area. Delivery of the required pipe material to the site would require up to 1,200 separate trucks. Approximately 1,200 pieces of HDPE pipe, each 50-ft long, would be either floated onto the Lake surface and securely anchored along Saddle Island, or stored at the Construction Staging Area until welding and installation of pipes begins in October 2009.

2.2.5 Temporary Haul Road

Temporary haul roads would not be constructed. Existing paved and unpaved roads would be used to access the area. These roads currently connect to Lakeshore Drive, and all construction vehicles would use these existing roads to access the Construction Staging Area and other construction sites. No new haul roads would be graded.

2.2.6 Electrical Ductbank and Underground Utility Lines

Buried power lines in a concrete ductbank would extend from the HPRS to an existing ductbank owned by the CRC. The powerlines would originate at the HPRS and run northwest and northeast to an underground ductbank within a previously disturbed corridor (Figure 1.0-2). The alignment of this ductbank crosses several existing utilities. Two additional utility lines (treated water and communications) would run from the AMSWTF site to the HPRS.

2.2.7 Alternate Public Boat Ramp

An alternate public boat ramp to duplicate the existing ramp at Boulder Harbor would not be built.

2.2.8 NRMT3 Temporary Staging Area

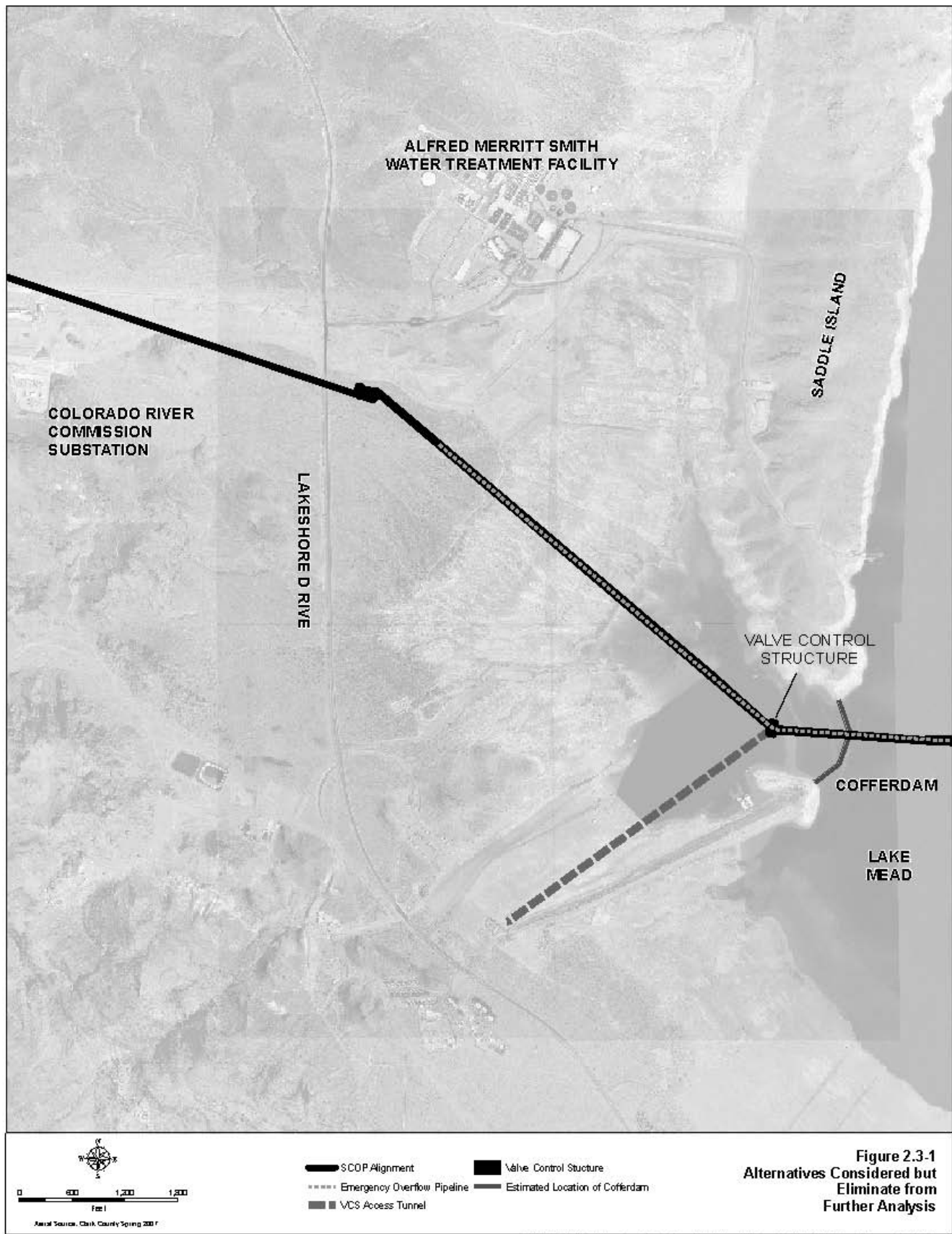
Under the No Action Alternative, the 3-acre NRMT3 Temporary Staging Area would not be permitted.

2.3 Alternatives Considered but Eliminated from further Analysis

This section includes a description of the project components that were considered, but eliminated from the final design and further analysis in this EA.

The construction and operation of a valve control structure (VCS) was considered. The VCS would be a reinforced concrete underwater structure located near the Pyramid Island Causeway within Boulder Harbor (Figure 2.3-1). The VCS would be 115-ft long, 30-ft wide and 30-ft high, and contain: multiple pipelines, electrical panels, a control system, a ventilation system, an overhead bridge crane, and sump pumps.

The VCS would regulate flows into the diffuser pipes into Lake Mead. As flows vary daily, the valves would regulate the amount of flow directed into the diffuser pipes to control discharge velocity. The VCS would be located so that the diffuser pipes are at an approximate elevation of 1,030 ft for hydraulics to



operate effectively. This elevation places the VCS well below low-Lake levels and at an elevation that would not interfere with future marina operations.

The VCS would require an access tunnel to facilitate maintenance operations. This access tunnel would begin above high-Lake level at an approximate elevation of 1,225 ft and be approximately 4,200 ft long. The tunnel alignment is shown on Figure 2.3-1.

The operation of the VCS would also require the installation of an emergency overflow pipeline (EOP). This pipeline would be 111-inch inner-diameter, originate at the HPRS and end at a location in Lake Mead (Figure 2.3-1). The EOP would only operate in the event of a Boulder Islands Diffuser system failure. If this event occurred, the EOP would transport up to 7.5 million gallons per hour of treated effluent to a discharge location in Lake Mead for a period of up to several hours. Once the VCS was eliminated, the EOP was no longer necessary.

The VCS and EOP were eliminated from further consideration because these facilities were no longer necessary. Instead, the Lake Diffuser pipeline was reconfigured and multiple air-capture chambers were added along the diffuser pipeline alignment. These chambers are designed to eliminate entrained air from the treated effluent and therefore eliminated the need for the VCS.

Additionally, the elevation of the VCS below the water surface would require that the construction area be completely dewatered. In order to accomplish this, the area between Saddle Island and Pyramid Island Causeway would be enclosed by installing a temporary cofferdam. The cofferdam would have resulted in temporary impacts to Boulder Harbor due to the water being removed. It would have been necessary to temporarily close the public boat ramp, and Boulder Harbor would have been closed to boating activities during construction. Therefore, the VCS and EOP were eliminated from further consideration based on engineering design. As a result, potential impacts to the environment and LMNRA visitors were reduced.

2.4 Mitigation and Monitoring

Mitigation measures are used to lessen adverse environmental impacts. Specific actions that may be considered when determining mitigation measures include:

- Avoiding the impact altogether by not taking a certain action or parts of an action;
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- Correcting the impact by repairing, rehabilitating, or restoring the affected environment;
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- Compensating for the impact by replacing or providing substitute resources or environments.

Each alternative represents a different possible impact to individual resources; therefore the level of proposed mitigation measures differs with each resource. Although mitigation measures are typically implemented to minimize or eliminate adverse impacts, actions that would minimize or eliminate negligible or minor impacts are also described in the following sections.

2.4.1 Public Safety and Experience, and Park Operations

While it may cause some inconvenience, the land between Boulder Harbor and the AMSWTF will be closed to public access. During construction, the public will be routed around or away from construction

areas. For safety purposes, barricades and temporary construction fencing would be used on land, and buoys would be used in the water to temporarily exclude the public from the construction area.

2.4.2 Geology, Topography, and Soils

No significant impacts to geology, topography, or soils would occur. However, wind and water erosion of disturbed soil could occur during construction activities. Construction activities and traffic would be restricted to designated paved and unpaved roads to mitigate the disturbance to soils, and to reduce the probability of increased erosion during construction. Areas would be restored and vegetated as early in the construction process as practical. Dust-control practices would be conducted to minimize wind erosion.

Restoration of the project site would be completed in accordance with a project-specific NPS-approved restoration plan. The restoration plan will address salvage of topsoil for reseeded purposes, recontouring the natural land surface, blending colors and textures, treating weeds, and revegetating the disturbed areas. All equipment and materials entering the LMNRA would be cleaned before entering into the LMNRA to reduce the potential for the spread of non-native species.

2.4.3 Water Resources

The mitigation measures that would be implemented during construction and operation of the SCOP are the same as described in the SCOP Final EIS Section 4.1.6.1 Surface Water (NPS and Reclamation 2006).

Both the Proposed Action and No Action Alternative would require that a Section 404 permit be acquired. The Section 404 permit requires that measures first be taken to avoid the Waters of the U.S. (WOUS) and then that measures be taken to minimize impacts to WOUS. Conservation measures and a mitigation and monitoring plan will be developed as part of the Section 404 permit. The USACE will approve the final plan.

2.4.4 Biological Resources

Under the Proposed Action and No Action Alternative, mitigation measures to protect vegetation, wildlife, and special status species are necessary. An approved restoration plan will be implemented as part of the temporary and permanent ROW grant. The restoration plan will describe the reclamation of temporarily disturbed areas to preconstruction conditions. This plan will outline revegetation, wildlife habitat reclamation, and soil stabilization measures. Reclamation of the disturbed vegetation will restore wildlife habitat that was temporarily disturbed during construction. Due to the regionally arid climate, vegetation recovers slowly over several years. Therefore, implementation, monitoring, and success criteria will be established to ensure the successful reclamation of the project area. Implementation of these mitigation measures will reduce any impacts on vegetation communities to negligible. Erosion and sediment control devices will be used to prevent impacts to Lake Mead.

Section 7 consultation with the USFWS was conducted for the original SCOP EIS and a Biological Opinion (BO) was issued (File No. 1-5-07-F-433) (USFWS 2007). The Terms and Conditions as described in the BO will apply to the Proposed Action. Several measures will be taken to avoid, minimize, monitor, and mitigate any impacts to the desert tortoise, including:

- A desert tortoise worker education program will be presented to all personnel who will be on site. Personnel will be able to locate sign indicating the presence of desert tortoises.

- A qualified biologist will conduct a tortoise survey immediately prior to commencement of construction. A qualified biologist will also monitor for desert tortoises during all construction activities.
- Tortoise exclusionary fencing will be installed around the construction area within the EI terminus site after the pre-construction survey.
- A litter-control program will be enforced to avoid attracting predators.
- A 20-mile-per-hour speed limit for construction vehicles will be enforced.
- Post-construction habitat restoration will be conducted.
- Remuneration fees will be paid for each acre of surface disturbance.

A preconstruction survey will be conducted for migratory birds during the nesting and breeding season. If active nests are located, buffer zones will be established and construction activities will not be allowed to occur within these zones.

The chances of spreading noxious weeds into the project area will be greatly reduced by implementing the following mitigation measures. These measures include mechanical or herbicidal methods to control and remove noxious weeds prior to construction from all areas to be disturbed.

- The undercarriages of construction vehicles will be washed prior to working on the project at designated wash stations located off the project site.
- The disturbed areas will be restored in accordance with LMNRA requirements and concurrence, including weed treatment as may be prescribed. The area will be monitored for restoration success according to success criteria established by the NPS, and for noxious weeds and exotic plants to ensure that establishment of these species do not occur.

2.4.5 Air Quality

This project is subject to Clark County air quality regulations, which require a number of specific actions by construction contractors, to reduce emissions of criteria pollutants during construction. The U.S. Environmental Protection Agency (EPA) has established new air quality standards for diesel engines for the year 2007. The 2007 diesel engines will reduce particulate matter less than 10 microns in diameter (PM₁₀) by 90 percent, and reduce sulfur to 15 parts per million (ppm), which will reduce nitrogen dioxide (NO₂) by 50 percent (EPA 2001). The use of engines that meet the newer emission standard would result in a predicted impact from this project plus background concentration that is less than the NAAQS.

Compliance with these measures will substantially limit the magnitude of potential air quality impacts associated with the Proposed Action and No Action Alternative. Additional measures that can be incorporated into the required dust control plan would include:

- Using wind breaks, and
- Regulating vehicle speeds.

2.4.6 Noise

The following measures would be implemented as standard operating procedures and considered best management practices (BMPs) for the Proposed Action and No Action Alternative. The measures include:

- Locating stationary construction equipment as far from nearby noise receptors as possible;
- Shutting off idling equipment;
- Scheduling construction operations to avoid periods of noise annoyance, as determined through consultation with the NPS and defined in special provisions;
- Notifying nearby affected parties in the event extremely noisy work occurs; and
- Installing temporary or portable acoustic barriers around stationary construction noise sources.

2.4.7 Cultural Resources

A Memorandum of Agreement (MOA) between the CWC and the State Historic Preservation Office (SHPO) was issued for the SCOP Final EIS (SHPO 2007). This MOA outlines a Treatment Plan that will be adhered to during construction and operation of the Proposed Action or No Action Alternative.

2.4.8 Visual Resources

Although no significant impacts to visual resources would occur from the Proposed Action or No Action Alternative, steps would be taken to further minimize the potential for impacts to visual resources. Restoration of the project site will be completed in accordance with a project-specific NPS-approved restoration plan. The restoration plan will address salvage of topsoil for reseeded purposes, recontouring the natural land surface, blending colors and textures, treating weeds, and revegetating the disturbed areas. Portions of the project area that may be viewed by LMNRA visitors will be revegetated with native species at the completion of construction activities. The restoration and revegetation of the project area will reduce the visual impact of the construction activities.

2.4.9 Utilities

The CWC will coordinate with the utility companies that have infrastructure in the vicinity of the project area to ensure that utility lines are not damaged during SCOP construction. There will be no impacts to existing utilities from the Proposed Action and No Action Alternative. Therefore, mitigation for utilities will not be required.

2.4.10 Traffic

Material deliveries in the vicinity of major roadway segments and intersections will be scheduled during the off-peak hours of approximately 10 pm to 5 am, Monday through Thursday.

Access routes through the LMNRA will be determined in coordination with the NPS. The NPS will also be involved in the development and review of any construction traffic-related plans for the Proposed Action and No Action Alternative.

The current condition of roads within the LMNRA including Lakeshore Drive would be maintained to the extent possible. Road condition assessment and monitoring would be established by the NPS before construction activities begin. Damage to the roadway surfaces would be repaired in accordance with NPS guidance. In addition, the CWC would accept financial responsibility for the repair of roadways damaged as a result of SCOP construction.

2.5 Environmentally Preferred Alternative

In accordance with Director's Order 12, the NPS is required to identify the "environmentally preferred alternative" in all environmental documents. The environmentally preferred alternative is the alternative that will promote NEPA, as expressed in Section 101 of NEPA. This alternative will satisfy the following requirements:

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. Assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
3. Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable or unintended consequences;
4. Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
5. Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and,
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The CEQ identifies the environmentally preferred alternative as "the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources (46 CFR 18026 – 46 CFR 18038)."

The Proposed Action is the environmentally preferred alternative. The Proposed Action would require fewer trucks entering and exiting the LMNRA because aggregate processing and HDPE pipe fabrication would occur on-site. In addition, the Proposed Action would use more of the project's spoils for backfill and restoration; therefore, requiring that less spoils are hauled off-site for disposal. The Proposed Action would not result in reduced recreational resources during construction of SCOP. The Proposed Action best realizes criteria 2, 3, 4, and 5 under Section 101 of NEPA. Under the No Action Alternative, recreational resources would be limited during construction of SCOP because there would not be an alternate boat ramp and more trucks would be required during construction. The No Action Alternative does not best meet criteria 2, 3 and 5 under Section 101 of NEPA.

2.6 Comparison of Impacts

Table 2.4-1 summarizes the potential long-term impacts from the Proposed Action and No Action Alternative. Short-term impacts are not included in this table, but are analyzed in Chapter 4: Environmental Consequences.

**Table 2.4-1 Comparison of Long-term Impacts from the
Proposed Action and No Action Alternatives**

Resource Issue	No Action Alternative Potential Effects	Proposed Action Alternative Potential Effects
Public Safety and Experience, and Park Operations	No long-term impacts	Minor, beneficial, long-term impacts to public experience would result from use of the public boat ramp once SCOP construction is complete. Public safety would be enhanced by the expansion of the Pyramid Island Causeway.
Geology, Topography, and Soils	Minor, long-term impacts would occur from construction of the HPRS because this site would not be recontoured and restored to preconstruction conditions.	Minor, long-term impacts would occur from construction of the HPRS because this site would not be recontoured and restored to preconstruction conditions.
Water Resources	No long-term impacts	No long-term impacts
Biological Resources	Minor, long-term impacts would occur because the construction of the HPRS would result in a permanent loss of habitat.	Minor, long-term impacts would occur because the construction of the HPRS and access road would result in a permanent loss of habitat.
Air Quality	No long-term impacts	No long-term impacts
Noise	No long-term impacts	No long-term impacts
Cultural Resources	Negligible, long-term impacts would occur from impacts to cultural resources that occur in the project area, but are not listed on the National Register of Historic Places (NRHP).	Negligible, long-term impacts would occur from impacts to cultural resources that occur in the project area, but are not listed on the NRHP.
Visual Resources	Minor, long-term impacts would occur from the construction of the HPRS	Minor, long-term impacts would occur from the construction of the HPRS, access road, and Pyramid Island Causeway expansion.
Utilities	No long-term impacts	Minor, beneficial, long-term impacts would occur because the HPRS could generate green energy that would be used within the LMNRA.
Traffic	No long-term impacts	No long-term impacts

3.0 AFFECTED ENVIRONMENT

This chapter provides a description of the existing environment in the project area and the resources that could be affected by implementing the proposed alternatives. Complete and detailed descriptions of the environment and existing use at LMNRA are found in the *LMNRA Resource Management Plan* (NPS 1999), the *LMNRA General Management Plan* (NPS 1986), the *LMNRA Lake Management Plan* (NPS 2002), and on the LMNRA website at www.nps.gov/lame.

The LMNRA was designated as the first National Recreation Area in 1964. Lake Mead is located in southern Nevada and northwestern Arizona, about 20 miles southeast of Las Vegas, Nevada, and about 5 miles north of Bullhead City, Arizona, and Laughlin, Nevada (Figure 3.0-1). It consists of two large reservoirs (Lakes Mead and Mohave) formed by the Colorado River. The recreation area is approximately 1.5 million acres in size.

The LMNRA ranks as the fifth most visited unit of the National Park System with recreational visits totaling more than 8.2 million in 2003 (NPS 2003). Uses within the LMNRA include boating, swimming, fishing, hiking, roadside sightseeing, backpacking, camping, and bicycling.

The majority of park visitation occurs during the summer months and involves water-based recreation. However, visitation is increasing in the spring and fall as visitors discover the backcountry regions of the recreation area through hiking and travel on the approved road system.

The project area is located in the western portion of the LMNRA in the Boulder Basin Developed Area on Lake Mead (Figure 3.0-2). Natural features and facilities in the vicinity of the project area include the AMSWTF, Saddle Island, a public boat ramp, public parking areas, and public restrooms.

3.1 Public Safety and Experience, and Park Operations

The LMNRA is the nation's oldest and largest recreation area and currently receives seven to eight million visitors per year. The NPS administers 1,484,159 acres of land within the LMNRA. The most popular activities within the LMNRA include boating, camping, fishing, hiking, bicycling, swimming, sightseeing, and backpacking. The current drought situation has affected some areas of the LMNRA dramatically by reducing water levels and impacting boat launching sites, shorelines, and swimming areas.

The LMNRA extends along 140 miles of the Colorado River and is geographically divided into two distinct regions: Lake Mead and Lake Mohave. The proposed project is located within the Boulder Basin of Lake Mead (Figure 3.0-2). Boulder Beach is one of the most heavily visited areas within the LMNRA. The proposed project area is located just north of Boulder Harbor, south of the AMSWTF, and east of Lakeshore Drive. The Lake Mead Marina was recently (February 2008) moved from the Proposed Action location to an area approximately 2 miles south in the Hemenway Harbor.

The area near the AMSWTF provides limited access to visitors, and vehicular traffic is restricted to AMSWTF staff and traffic necessary for facility operations. Due to national security concerns for all water treatment facilities, the grounds are fenced and a 24-hour security patrol exists.

The River Mountains Loop Trail (RMLT) is a nearly completed 35 mile trail that will connect LMNRA, Hoover Dam, Boulder City, Henderson, and the rest of the Las Vegas Valley. When completed, the trail will provide access to the project area for bikers, pedestrians, and wheelchairs. The RMLT was originally

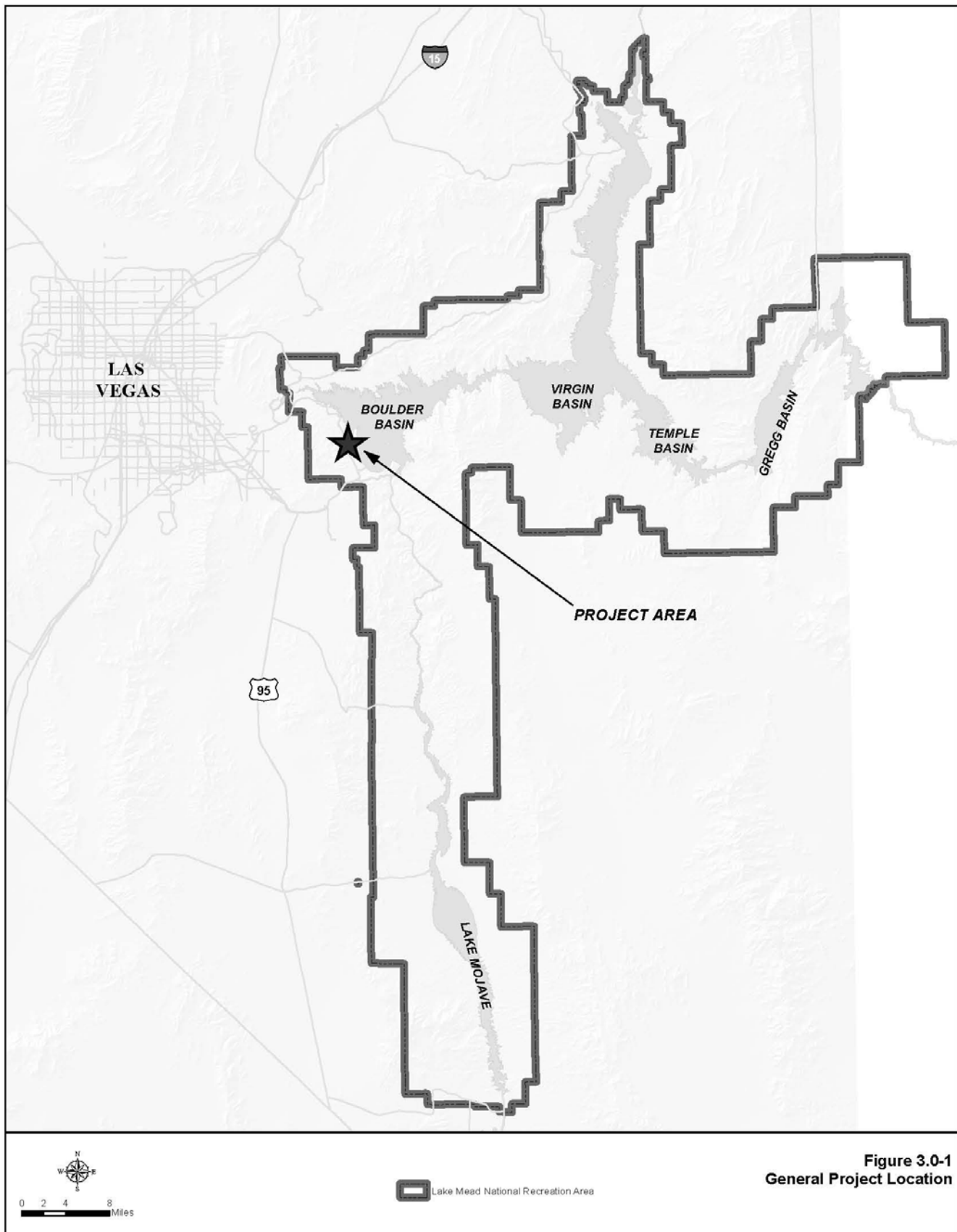
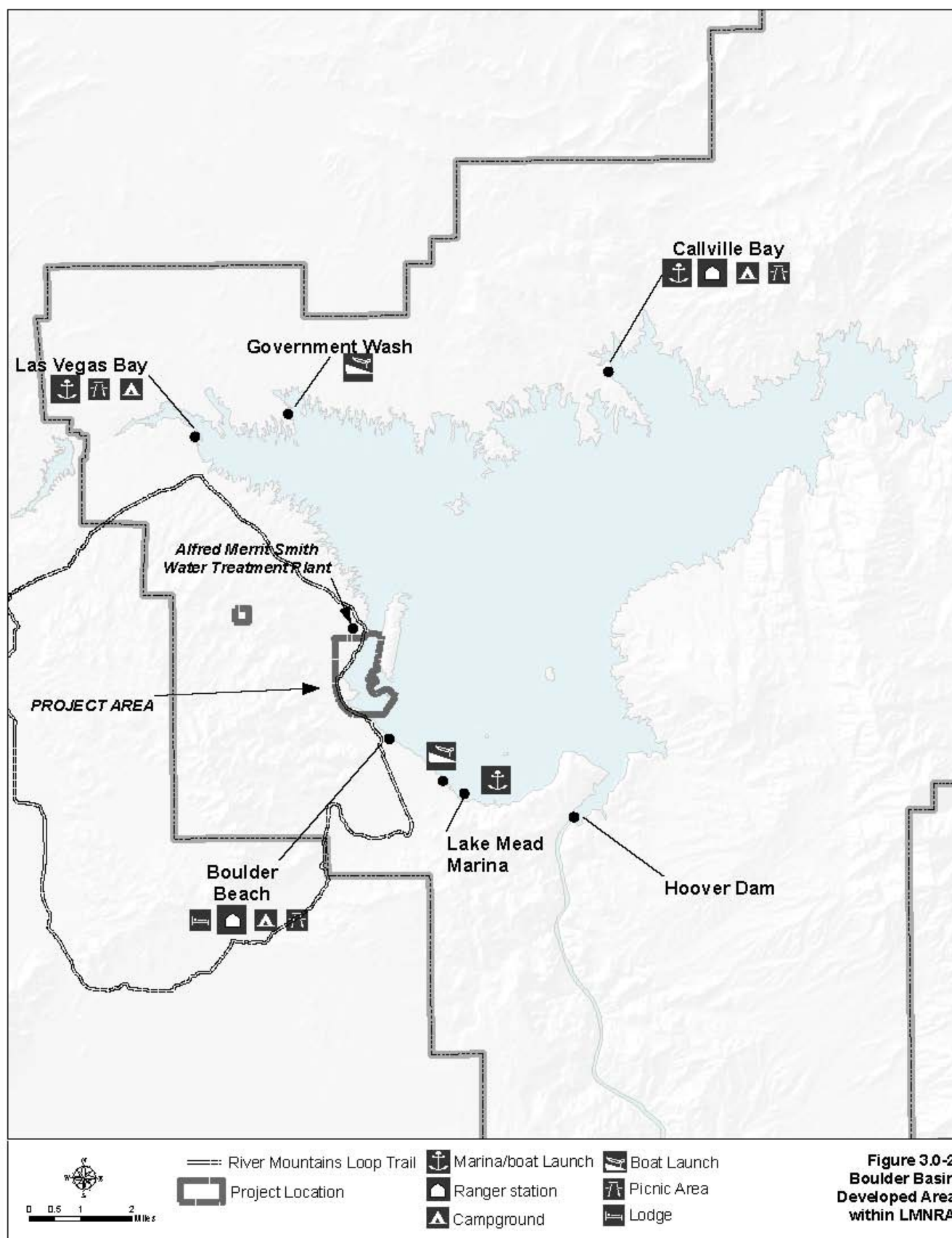


Figure 3.0-1
General Project Location



scheduled for completion in 2007, but portions of the RMLT are still under construction. A portion of this trail in the vicinity of the project area was completed in early 2008. This segment is a temporary trail that was built to avoid the SCOP construction area. The CWC will install the original RMLT alignment after SCOP is complete and will remove the temporary RMLT that was built to avoid the SCOP site.

3.2 Geology, Topography, and Soils

The LMNRA is characterized by generally north-south trending mountain ranges separated by broad, shallow valleys. The River Mountains run along the western boundary of the LMNRA west of Lakeshore Drive. The mountains are dissected by deep ravines opening into broad alluvial fans. Adjoining fans commonly coalesce and form a continuous alluvial apron along the base of the mountains. These slopes extend eastward where they merge with the shoreline of Lake Mead.

The existing topography in the project area is generally characterized by gentle slopes with an average gradient of less than one percent. The underlying strata of these slopes consist chiefly of Tertiary and Quaternary deposits.

3.3 Water Resources

The NPS *Management Policies* (2006) require that Parks and their agents:

- Work with appropriate governmental agencies to obtain the highest possible standards available under the CWA for the protection of park waters;
- Take all necessary actions to maintain or restore the quality of surface and groundwaters within the parks, consistent with the CWA and all other applicable laws and regulations;
- Enter into agreements with other agencies, as appropriate, to secure their cooperation in maintaining or restoring the quality of park water resources.

These policies also mandate that the NPS will take actions to prevent the destruction, degradation or loss of wetlands and it is official management policy to implement “no net loss of wetlands”. The NPS shall also manage watersheds as complete hydrologic systems and minimize human caused disturbance to natural upland systems that deliver water, sediment, or debris to watersheds.

The project area is located adjacent to Lake Mead and the Colorado River Watershed and is within the Colorado River Hydrographic Basin. The area is located within the administrative boundary of the Black Mountains Area Groundwater Basin (Nevada Department of Conservation and Natural Resources 2008). The project area is characterized by alluvial fans with ephemeral washes that drain into Lake Mead. The majority of the project area is flat or unchannelized and displays characteristics of sheet flow. In recent years the southwest has experienced extreme drought, which has caused lake levels in Lake Mead to drop approximately 100 ft.

The United States Army Corp of Engineers (USACE) regulates the discharge of dredged or fill material into waters of the U.S. As applied to this particular project, WOUS by definition include interstate waters, tributaries of interstate waters, and wetlands adjacent to interstate waters and tributaries (33 CFR 328). Lake Mead is an interstate WOUS and is under the jurisdiction of the USACE. According to the USACE the ordinary high water mark (OHWM) for Lake Mead is 1,221 ft (USACE 2007). Any portion of the project area located below the OHWM is under the jurisdiction of the USACE. Approximately 83 acres of

the Proposed Action would be located below OHWM and 25 acres of the No Action Alternative would be located below OHWM.

A jurisdictional determination was conducted for the cut-and-cover portions of the project as analyzed in the SCOP EIS. The results of the jurisdictional determination were reported in the Waters of the U.S. Jurisdictional Determination Report for the Systems Conveyance and Operations Program (PBS&J 2006). The washes within the project area were determined to be non-jurisdictional and the USACE concurred with the findings on July 17, 2006.

The potential WOUS within the EA project area were located during field surveys conducted in November 2007. One wash identified within the project area has a definable bed and bank. The wash was identified in the field using the three criteria of hydrology, geomorphology, and vegetation. It was determined that this wash could potentially be WOUS. The results of the field investigations and jurisdictional determination will be presented to the USACE in a Technical Memorandum in 2008 once all project components have been finalized. At the time of this writing, concurrence had not been received from the USACE. There are no additional tributaries or adjacent wetlands within the project area that are under the jurisdiction of the USACE.

3.4 Biological Resources

The methodology used to develop the biological resources baseline in the project area included agency coordination, literature review, and field investigations.

PBS&J conducted surveys for sensitive species in the project area. For portions of the project area that were determined to be potential desert tortoise habitat, 100-percent ground coverage surveys were conducted. The survey methodology used was linear transects spaced approximately 30 ft apart. Approximately 182 acres were surveyed using this methodology. Surveys were conducted October 9 through October 17, 2007.

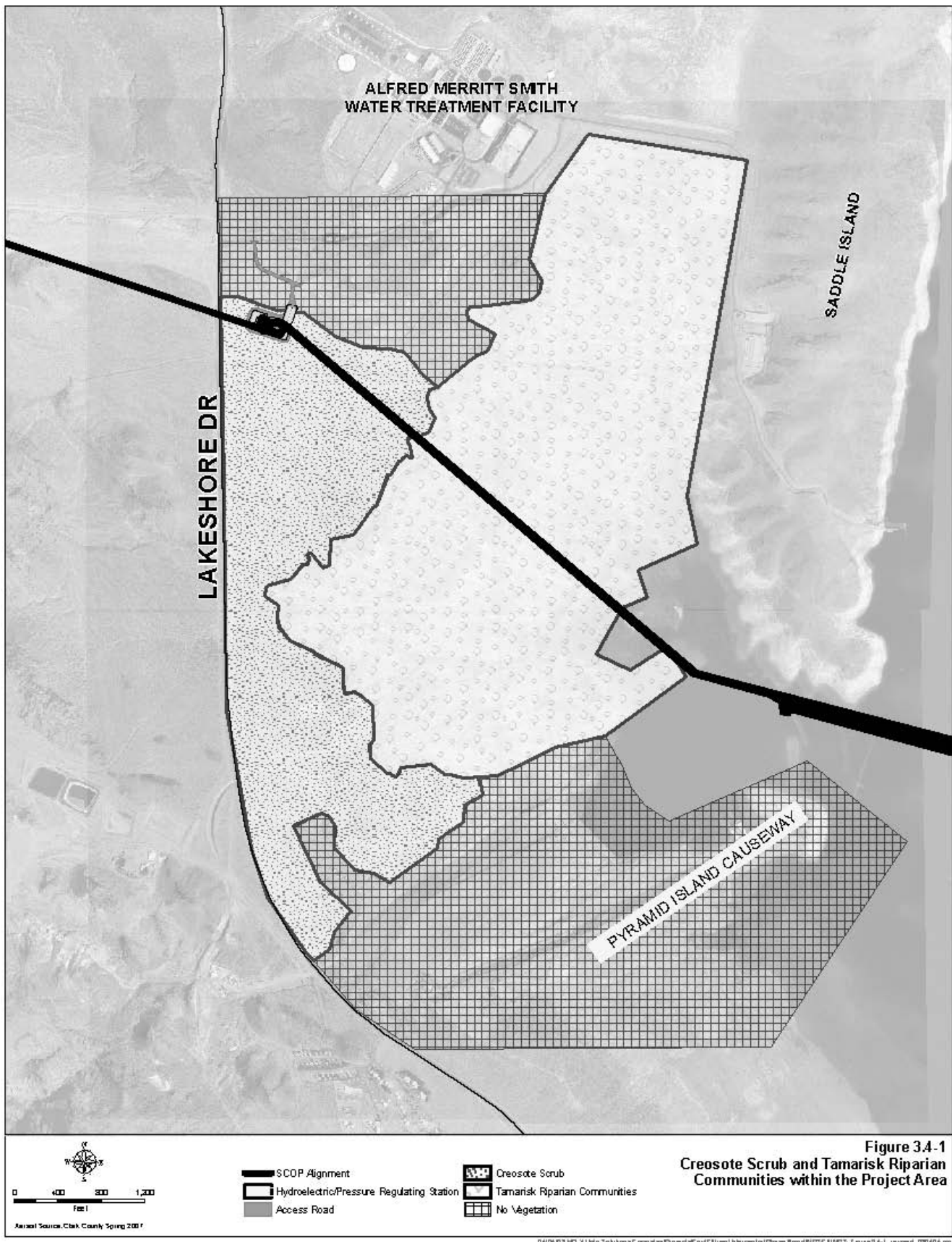
3.4.1 Vegetation

This section provides a description of the vegetative communities and sensitive plant species that are located within the proposed project area.

Plant Communities

The project area is located in the Mojave Desert biome. The project area consists of four distinct vegetation communities: Mojave Creosote Bush Scrub, Desert Wash Scrub, non-native Tamarisk Riparian, and disturbed (developed areas or areas with no vegetation). Non-native Tamarisk Riparian habitat occurs where the land was previously inundated when Lake levels were higher (is located below the OHWM), and now consists of dense tamarisk stands (Figure 3.4-1). The alternate boat ramp, Pyramid Island Causeway Expansion, and the NRMT3 Temporary Staging Area are located in previously disturbed areas. Therefore, these components were not included in the biological surveys.

Mojave Creosote Bush Scrub community is the dominant community within the project area. The predominant vegetation within this community consists of creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), and cacti species. The density of cacti species within the Creosote Bush Scrub community is approximately four cacti per acre. This Proposed Action area is located in a site with two distinct soil types. Upland areas are distinguished by rocky, basaltic soils with shallow desert washes bisecting the site in a west to east direction. Soils in the washes were predominantly sandy well-drained soils with cobble. The area associated with tamarisk habitat consists of sandy, well-drained soils. The shrubs are commonly spaced anywhere from 2 to 8 ft apart.



Desert Wash Scrub community is located within the project area in the large washes. This community includes the catclaw acacia (*Acacia greggii*), and is commonly mixed with the Mojave creosote bush community. Table 3.4-1 lists the common plant species that are found throughout the project area.

Table 3.4-1 Common Plant Species Observed in the Survey Area

Scientific Name	Common Name
<i>Larrea tridentata</i>	Creosote bush
<i>Ambrosia dumosa</i>	White bursage
<i>Tamarix ramosissima</i>	Salt cedar
<i>Encelia farinosa</i>	Brittlebush
<i>Krameria erecta</i>	Ratany
<i>Atriplex hymenelytra</i>	Desert holly
<i>Hymenoclea salsola</i>	Cheesebush
<i>Amsinckia tessellata</i>	Checker fiddleneck
<i>Salvia columbariae</i>	Chia
<i>Petalonyx thurberi</i>	Sandpaper plant
<i>Cryptantha</i> species	White forget-me-nots
<i>Eriogonum deflexum</i>	Flat-top buckwheat
<i>Eriogonum inflatum</i>	Desert trumpets

Cacti, Yuccas, and Evergreen Trees

All native cacti, yuccas, and evergreen trees are protected and regulated by the State of Nevada under Nevada Revised Statute (NRS) 527.060-.120. This provision does not allow the removal or destruction of the listed plant species on Nevada state lands, county lands, reserved or unreserved lands owned by the federal government, and from privately owned lands without written permission from the legal owner, or his duly authorized agent, specifying locality by legal land description and number of plants to be removed or possessed.

There were numerous cacti and yucca encountered during the field surveys within the project area. The cactus species that were observed throughout the project area were beavertail cactus (*Opuntia basilaris*), barrel cactus (*Ferocactus cylindraceus*), silver cholla (*Opuntia echinocarpa*), hedgehog cactus (*Echinocereus engelmannii*), and fishhook cactus (*Mammillaria tetrancistra*). A complete count of the cacti species observed in the project area is shown in Table 3.4-2. No evergreen tree species were observed during surveys.

Table 3.4-2 Number of Cacti Plants Observed in the Survey Area

Scientific Name	<i>Opuntia basilaris</i>	<i>Opuntia echinocarpa</i>	<i>Ferocactus cylindraceus</i>	<i>Mammillaria tetrancistra</i>	<i>Echinocereus engelmannii</i>
Common Name	Beavertail Cactus	Silver Cholla	Barrel Cactus	Fishhook Cactus	Hedgehog Cactus
Number Observed	708	17	89	8	1

Noxious Weeds

Federal agencies are directed by EO 13112, Invasive Species, to expand and coordinate efforts to prevent the introduction and spread of invasive plant species (noxious weeds) and to minimize the economic, ecological, and human health impacts that invasive species may cause. According to NRS 555.005,

noxious weeds are defined as "any species of plant that is or is likely to be, detrimental or destructive and difficult to control or eradicate." Noxious weeds are a concern in most parts of the US and in southern Nevada, as they are opportunistic, and can exclude native plants from an area if left unchecked. Weed management is an integral part of maintaining ecosystem health.

A large portion of the survey area was historically inundated by Lake Mead when the lake levels were higher. These sites of previous inundation currently support dense stands of salt cedar (*Tamarix ramosissima*), a Category C noxious weed as defined by the Nevada Department of Agriculture (Bartz 2006). Category C weeds are "weeds generally established and widespread in many counties of the state. Such weeds are subject to active eradication from the premises of a dealer of nursery stock." The NPS currently employs an Exotic Plants Management Team, whose purpose is to actively control noxious weeds, including salt cedar, from the LMNRA. The project area outside of the site of previous inundation does not support any known noxious weeds.

3.4.2 Wildlife

The project area supports numerous species of animals that include mammals, birds, lizards, and various invertebrate species. It also serves as a travel corridor for many animals and is an access point for wildlife to reach the lake, which provides a constant water source. The rock outcrop located in the southern portion of the project area serves as a perch site for predatory bird species and contains one potential carnivore cave. This cave contained numerous small mammal bones, feathers, and pieces of fur. Wildlife species observed in the proposed project area include side-blotched lizards (*Uta stansburiana*), whiptail lizards (*Cnemidophorus tigris*), common ravens (*Corvus corax*), and coyote (*Canis latrans*).

3.4.3 Special Status Species

This section summarizes information on the species listing, habitat, and range for the federally listed, state listed, and BLM sensitive wildlife species. This information was compiled from existing scientific literature, technical reports, and survey data collected for the project. Determination of the federally and state listed wildlife species that could potentially occur within the project site was derived from literature review, and correspondence with the United States Fish and Wildlife Service (USFWS) (USFWS 2008), Nevada Department of Wildlife (NDOW) (NDOW 2008), and the Nevada Natural Heritage Program (NNHP) (NNHP 2008). These correspondences are included in Appendix A. Table 3.4-3 summarizes the sensitive wildlife species that occur and could potentially occur in or near the project area. In addition to these species, migratory birds and raptors have the potential to occur in the project area. All migratory birds are protected under the MBTA of 1918 as amended (16 USC 703-712). Raptors are protected in the state of Nevada.

Surveys were conducted to determine whether the species identified in Table 3.4-3 could occur in the project area. A search for special status plant species was conducted and none were located in the project area. Since there would not be any potential impacts to these plant species, they will not be further analyzed in this document.

Table 3.4-3 Special Status Species that may occur in the Project Area

Scientific Name	Common Name	Status			Suitable Habitat in Project Area
		USFWS	BLM	NAC 503 or NAC 527	
<i>Gopherus agassizii</i>	Desert Tortoise	LT	S	T	Yes
<i>Rallus longirostris</i> ssp. <i>yumanensis</i>	Yuma clapper rail	LE	S	E	No
<i>Empidonax traillii</i> ssp. <i>extimus</i>	Southwestern willow flycatcher	LE	S	E	No
<i>Heloderma suspectum</i> ssp. <i>cinctum</i>	Gila Monster	xC2, NL	N;S	P	Yes
<i>Sauromalus ater</i>	Chuckwalla	None	N	None	Yes
<i>Ovis Canadensis</i> ssp. <i>nelsoni</i>	Desert bighorn sheep	None	N	B	Yes
<i>Macrotus californicus</i>	California Leaf-nosed Bat	None	N	S	Yes
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat	None	N	P	Yes
<i>Idionycteris phyllotis</i>	Allen's lappet eared bat	None	N	P	Yes
<i>Myotis thysanodes</i>	Fringed myotis	None	N	P	Yes
<i>Antrozous pallidus</i>	Pallid bat	None	N	P	Yes
<i>Euderma maculatum</i>	Spotted bat	None	None	T	Yes
<i>Corynorhinus townsendii</i>	Townsend's big eared bat	None	None	S	No
<i>Eumops perotis</i>	Western mastiff bat	None	None	S	No
<i>Lasiurus blossevillei</i>	Western red bat	None	N	S	No
<i>Lanius ludovicianus</i>	Loggerhead shrike	None	None	S	Yes
<i>Athene cunicularia</i>	Burrowing owl	None	N	P	Yes
<i>Falco mexicanus</i>	Prairie falcon	None	N	E	No
<i>Phainopepla nitens</i>	Phainopepla	None	N	P	No
<i>Enceliopsis argophylla</i>	Silverleaf sunray	None	N	None	Yes
<i>Penstemon bicolor</i> ssp. <i>roseus</i>	Rosy twotone beardtongue	None	N	None	Yes
<i>Arctomecon californica</i>	Las Vegas Bearpoppy	None	N	P	No
USFWS: Threatened (LT), Endangered (LE), Candidate for Threatened or Endangered listing (C), Species of Concern (SC), Listed as Endangered but not in a portion of its range (LENL); Not Listed in a Portion of the Species' Range (NL) BLM: Nevada Special Status Species, USFWS listed, proposed, or candidate for listing (S); Nevada Special Status Species designated by state office (N) Nevada Administrative Code (NAC) 503 or 527: State of Nevada protected under NAC 503 as Endangered (E), Threatened (T), Sensitive (S), Protected (P), or Big Game (B).					

Desert Tortoise

The desert tortoise was the only federally listed wildlife species identified as potentially occurring in the project area. Field surveys for desert tortoises were conducted using a 100-percent coverage presence-or-absence survey methodology as described in the *Procedures for the ESA Compliance for the Mojave Desert Tortoise* (USFWS 1992). No tortoise sign was encountered on the survey site. Approximately 182 acres were surveyed for desert tortoises using the 100-percent coverage protocols.

It is the Mojave population of desert tortoises that is federally listed by the ESA as a Threatened species. The Mojave population of the desert tortoise occurs north and west of the Colorado River in the Mojave Desert eco-region in California, Nevada, Arizona, and Utah.

The desert tortoise is a large herbivorous reptile found at elevations ranging from below mean sea level (msl) to 5,000 ft above msl. The desert tortoise primarily forages on annual wildflowers and native desert grasses, especially galleta (*Pleuraphis rigida*) and Indian rice grass (*Achnatherum hymenoides*). Ideal conditions for excavating burrows include gently sloping terrain with soils ranging from sand to sandy-gravel; however, desert tortoises may also utilize terrain with steep slopes and rocky soils. Soils must be friable enough for tortoises to excavate burrows, but firm enough so burrows do not collapse.

Desert tortoises are generally most active during the spring, early summer, and autumn when annual plants are most common and mating behaviors frequently occur. Desert tortoises usually spend the remainder of the year in burrows protected from the extreme conditions of the desert.

Gila Monster

In the US, Gila monsters are not listed as either a threatened or endangered species under the ESA. However, the Gila monster was designated as an Evaluation species under Clark County's Multiple Species Habitat Conservation Plan (MSHCP) and is protected by Nevada State law (Nevada Administrative Code [NAC] 503.080) and (NAC 503.093). The Gila monster is also a BLM-sensitive species.

The Gila monster is a large desert species and is one of only two species of venomous lizards in the world. It ranges throughout southwestern Utah, the southern tip of Nevada, southwestern New Mexico, Arizona, and the Sonoran Desert. It can be found in Mojave desert scrub habitats where it chiefly inhabits shrubby, grassy, and succulent deserts. It may be found in canyon bottoms and arroyos with permanent or intermittent streams. Its elevational range is from sea level to approximately 6,400 ft (Stebbins 2003). Gila monsters are mainly terrestrial but infrequently climb into vegetation. Refuges include spaces under rock, dense shrubs, burrows, or woodrat nests (NatureServe 2007). They choose deeper shelter sites as temperatures get hotter in the summer and shallow sites during early fall and spring when temperatures are cooler.

Gila monsters in Nevada roughly spend one-third of their year in hibernation with greatest surface activity in late spring (May-June). They breed in May and June and lay their eggs in July and August of the following year. These eggs then incubate in burrows and develop from fall to the early spring, and young appear in April and June. No individuals of this species were observed during surveys; however, potential habitat does exist.

Chuckwalla

The chuckwalla is a BLM-sensitive species. The chuckwalla is a large, flat-bodied lizard that is commonly distributed throughout the Mojave and Colorado deserts, primarily in creosote scrub habitats (Stebbins 2003). This species inhabits rocky flats and hillsides, lava flows, and large outcrops. Chuckwallas have also been observed inhabiting atypical places such as burrows in dirt, piles of railroad ties, and artificial rip-rap. When disturbed, the chuckwalla will retreat into a rock crevice and inflate with

air, which makes extraction difficult. Chuckwalla populations are locally threatened by excessive collecting and habitat degradation (NatureServe 2008). No individuals were observed during surveys. However, potential habitat does exist.

Bats

Several species of protected bats could occur in the project area. Typical habitats for bats include caves or mines. One potential cave and smaller crevices that could provide potential roosting sites were noted during field surveys. Potential day roosts for bats may also exist in the form of cracks and crevasses in rock formations near the project area. Their use of the project area would most likely be limited to foraging or migrating. Many of these species prefer riparian areas for foraging, and therefore, it is likely they would use the project area.

Desert Bighorn Sheep

The desert bighorn sheep is a BLM-sensitive and Nevada state-protected species. Threats to the desert bighorn sheep are unregulated or illegal hunting, introduced diseases, competition from livestock, and continual human encroachment on their habitat (Wehausen 2008). Fragmentation of their population by highways, fences, and aqueducts has also contributed to some decline in their population. Over the past 12 years, desert bighorn numbers have stabilized or increased slightly as a result of reintroduction to former habitat, water developments, and favorable land use decisions (BLM 1998b). No individuals of this species were observed during surveys. However, bighorn sheep may use the project area to access the lake.

Migratory Birds

All migratory bird species that may occur in the project area, with the exception of rock pigeons (*Columba livia*), house sparrows (*Passer domesticus*), and European starlings (*Sturnus vulgaris*), are protected under the MBTA of 1918, as amended (16 USC 703-712). The MBTA states that it is unlawful to take, kill or possess migratory birds, their parts, nests and eggs (16 USC 703-711). For migratory game species, the treaty order is carried out cooperatively with the state agencies (e.g., NDOW), which set and enforce legal harvest laws and regulations. Any impacts to migratory birds are primarily a concern during the breeding season, when most species protected under the MBTA are expected to be rearing young. Several migratory bird species are considered special status species within the region. Of these species, the burrowing owl occurs in areas dominated by short vegetation where small mammal and/or tortoise burrows are available for nesting. Suitable burrows for this species exist in the project area but none were sighted within the project area during the surveys.

Raptors

All raptors are protected by the state of Nevada. A raptor is any bird of prey that hunts and kills other animals. Raptors potentially occurring in the project area include both resident and migrating species. Raptors potentially occurring in the project area include the peregrine falcon, ferruginous hawk, golden eagle, bald eagle, and western burrowing owl. While these raptors are not known to nest within the project area, they could occur in the project area while foraging or migrating.

3.5 Air Quality

In 1990, the federal government passed the CAA amendments, a set of environmental laws establishing primary and secondary standards for National Ambient Air Quality Standards (NAAQS) for six criteria pollutants. These six criteria pollutants are carbon monoxide (CO), NO₂, sulfur dioxide (SO₂), PM₁₀, lead (Pb), and ozone. Of these six pollutants, only ozone is not emitted directly from sources, but is formed in the atmosphere by the reaction of nitrogen oxides, volatile organic compounds (VOCs), and sunlight (EPA 2007a). Air quality in a given location is described by the concentrations of these pollutants in the atmosphere. An area that violates the NAAQS for one or more of the criteria pollutants is classified by the

EPA as being in non-attainment of the standard. Non-attainment areas are further classified based on the magnitude of the air quality problem. These standards (or limits) are concentrations of the pollutant in the ambient air that is presumed to be protective of human health and the environment.

The project area is located within the LMNRA, which is in the Hydrographic Basin 13, Black Mountains Area airshed (Environmental Quality Management, Inc. 2006). This airshed is classified as being in attainment or is unclassified for all criteria pollutants. The Las Vegas Valley airshed is adjacent to the Black Mountains Area airshed and has been classified by the EPA (2007b) as being “in attainment” for NO₂ and SO₂; in “basic nonattainment” for ozone; and as being “in serious nonattainment” for CO and PM₁₀ (see Figure 3.5-1). On May 3, 2004 the EPA approved the Clark County PM₁₀ state implementation plan (SIP) in which the county adopted a series of rules to control fugitive dust sources (EPA 2007c).

The Clark County Air Quality Regulations stipulate that the maximum threshold values within the Las Vegas Valley for the six criteria pollutants are as listed in Table 3.5-1. These regulations are taken from Section 12 of the Clark County Air Regulations and apply on a project specific basis.

Table 3.5-1 Maximum Threshold Values for the Las Vegas Valley

Pollutant	Management Area & Serious Nonattainment Area (tons per calendar year)	Prevention of Significant Deterioration (PSD) Area (tons per calendar year)
PM ₁₀	15	15
CO	10	70
VOC**	20	40
NO ₂	20	40
SO ₂	Not Applicable	40
Pb	Not Applicable	0.3
HAP*	Not Applicable	10
TCS***	Not Applicable	1.0
*Hazardous air pollutants are any pollutant listed pursuant to section 112(b) of the Clean Air Act. **Volatile organic compounds are any compound, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions. ***Toxic Chemical Substances <i>Source: Clark County 2004</i>		

3.6 Noise

Noise is defined as any unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. It may be intermittent or continuous, steady or impulsive, stationary, or transient. The human ear can detect sounds that range in frequency from about 20 hertz (Hz) to 20,000 Hz and are most sensitive to ranges from 1,000 to 4,000 HZ range, which are described in terms of A-weighted decibels (dBA). The “A-weighted scale” is normally used to describe noise from transportation and other human activities. Table 3.6-1 provides a range of noise conditions.

The region of influence for noise includes those areas associated with construction and maintenance activities and those areas (e.g., neighborhoods, parks, wildlife) that could be adversely impacted from exposure to related activities. Noise conditions in the vicinity of the project area are generated by outdoor recreational activities, aircraft, vehicle traffic, and construction-related disturbances. Ambient noise conditions were not measured within or adjacent to the project area.

Table 3.6-1 Typical Sound Pressure Levels Associated with Common Noise Sources

Sound Pressure Level (dBA)	Subjective Evaluation	Outdoor Environment	Indoor Environment
140	Deafening	Jet aircraft at 75 ft	
130	Threshold of pain	Jet aircraft during takeoff at a distance of 300 ft	
120	Threshold of feeling	Elevated train	Hard rock band
110		Jet flyover at 1,000 ft	Inside propeller plane
100	Very loud	Power mower, motorcycle at 25 ft, auto horn at 10 ft, crowd noise at football game	
90		Propeller plane flyover at 1,000 ft, noisy urban street	Full symphony or band, food blender, noisy factory
80	Moderately loud	Diesel truck (40 miles per hour) or heavy construction equipment at 50 ft	Inside auto at high speed, garbage disposal, dishwasher
70	Loud	B-757 cabin during flight	Close conversation, vacuum cleaner, electric typewriter
60	Moderate	Air-conditioner condenser at 15 ft, near highway traffic	General office
50	Quiet		Private office
40		Farm field with light breeze, birdcalls	Soft stereo music in residence
30	Very quiet	Quiet residential neighborhood	Bedroom, average residence (without T.V. and stereo)
20		Rustling leaves	Quiet theater, whisper
10	Just audible		Human breathing
0	Threshold of hearing		
<i>Source: Black & Veatch 2003.</i>			

The project area is located in Clark County, Nevada, and is subject to local regulations regarding noise emissions. Clark County noise regulations are included in the *Site Environmental Standards, Title 30 of the Clark County Unified Development Code* (Part 68.20). However, the requirements of the County noise code do not apply to construction or demolition activities when conducted during daytime hours (generally, 6:00 am to 6:00 pm.). In accordance with NPS Management Policies (2006) and Director's Order 47: *Sound preservation and Noise Management*, an important part of the NPS mission is preservation of natural soundscapes associated with national park units. The NPS will restore degraded soundscapes to the natural condition wherever possible, and will protect natural soundscapes from degradation due to noise. Construction activities have the potential to effect local noise levels.

Residences, motels and hotels, schools, libraries, religious institutions, hospitals, nursing homes, auditoriums, parks and outdoor recreation areas are generally more affected by noise than commercial and industrial areas and are considered to be sensitive receptor sites. There are no sensitive receptors in the project area other than LMNRA. However, the habitats of listed threatened and endangered animals and fowl are also considered sensitive receptor sites.

3.7 Cultural Resources

Cultural resources are places or objects that are important for scientific, historic, and/or cultural values to communities, cultures, groups, or individuals. They may include prehistoric, protohistoric, and historic sites; archaeological remains and structures; and other artifacts that provide evidence of past human activity. Cultural resources that may exist within the project area include prehistoric resources (such as artifact scatters, cleared areas, and rock shelters) and historic resources related to early mining activities, the construction of Hoover Dam, and early park development.

In accordance with NPS *Management Policies* (2006), the NPS will preserve unimpaired the nation's cultural resources for the enjoyment, education, and inspiration of this and future generations. The NPS seeks to employ the most effective concepts, techniques, and equipment to protect cultural resources against theft, fire, vandalism, overuse, deterioration, environmental impacts, and other threats, without compromising the integrity of the resources.

Previous cultural resource inventories in the Boulder Beach development zone have identified a number of historic and prehistoric resources. HRA conducted surveys of the project area on October 19 through October 24, 2007. HRA identified eight isolated occurrences (IO) in the project area. These include a small alcove, cleared circles, a glass bottle, and several mechanically dug holes in the ground of unknown age or function (Table 3.7-1). These holes may be a function of making the lake deeper for boats docked there. HRA also identified a segment of the Six Companies, Inc. Railroad (SCIRR) during the survey. The ties have been pulled up, but the berm is still intact and is in good condition in most places. A few railroad spikes were found along the berm. Also present are several push piles, a two-track road segment that may be related to the berm, and areas that were blasted for construction of the railroad. This newly discovered segment of the SCIRR is not, however, a contributing element to the Hoover Dam Railroads Non-contiguous Historic District. This segment has been impacted by erosion and the construction of a boatyard; the integrity of the site has been compromised (HRA, Inc. 2007). None of the sites identified are eligible for listing on the NRHP.

Table 3.7-1 Isolated Occurrences Identified in the Project Area

IO #	Description
1	Small alcove with cleared area inside, rocks piled up against one wall
2	Two cleared circles 8 ft (2.5 meters [m]) in diameter, rock pile with 25 medium to large rocks in 39 ft (12 m) area
4	Clear liquor bottle: Armstrong Cork Company makers' mark on base dates from 1938-1969
5	Chert battered implement with three areas knocked off
6	Two mechanically dug holes; one is 25 ft x 25 ft and 4 ft deep (7.6 m x 7.6 m x 1.2 m); the second hole is 25 ft x 10 ft and 3 ft deep (7.6 m x 3 m x 1 m)
7	Four mechanically dug holes between 21 and 30 ft (6.4 and 9.1 m) in diameter, and between 3 and 10 ft deep (1 and 3 m)
8	Three mechanically dug holes 23 ft (7 m) in diameter, and between 3 and 5 ft (1 and 1.5 m) deep
9	Two mechanically dug holes 5 ft x 15 ft (1.5 and 4.6 m) and 3 ft (1 m) deep
<i>Source: HRA 2004</i>	

3.8 Visual Resources

Visual resources include the physical (natural and artificial) and biological features of the landscape that contribute to the scenic quality of an area. Scenic quality is a measure of the visual appeal of the landscape perhaps best described as the overall impression retained after passing through an area. Although relative values can be used to evaluate scenic quality, visual appeal is subjective and can vary among observers (BLM 1986a).

The visual resources evaluation for this project is being conducted in accordance with the objectives and methods described in the BLM *Visual Resource Management (VRM) Guidelines* (BLM 1986a) and the *BLM Manual Handbook - Visual Resource Contrast Rating* (BLM 1986b). The BLM VRM guidelines were used for visual resource assessment because the NPS does not have any formalized guidance procedures for assessing visual resources. The objective of the VRM Guidelines is to manage federal lands in a manner that would protect the quality of the scenic or visual values of those lands.

The project area varies from rolling hills to mountains to bajadas to washes, ending at the Lake Mead shoreline. Vegetation exists typical of a Mojave desert scrub environment. The vegetation is dominated by several species including creosote bush, brittle bush, black bush, and salt cedar. The area as seen from Lakeshore Drive provides views of rolling hills and a background of the River Mountains to the east and Lake Mead to the west and south. The AMSWTF dominates the view to the northeast. The dominant color scheme is gray-green broken by the blue-green of Lake Mead.

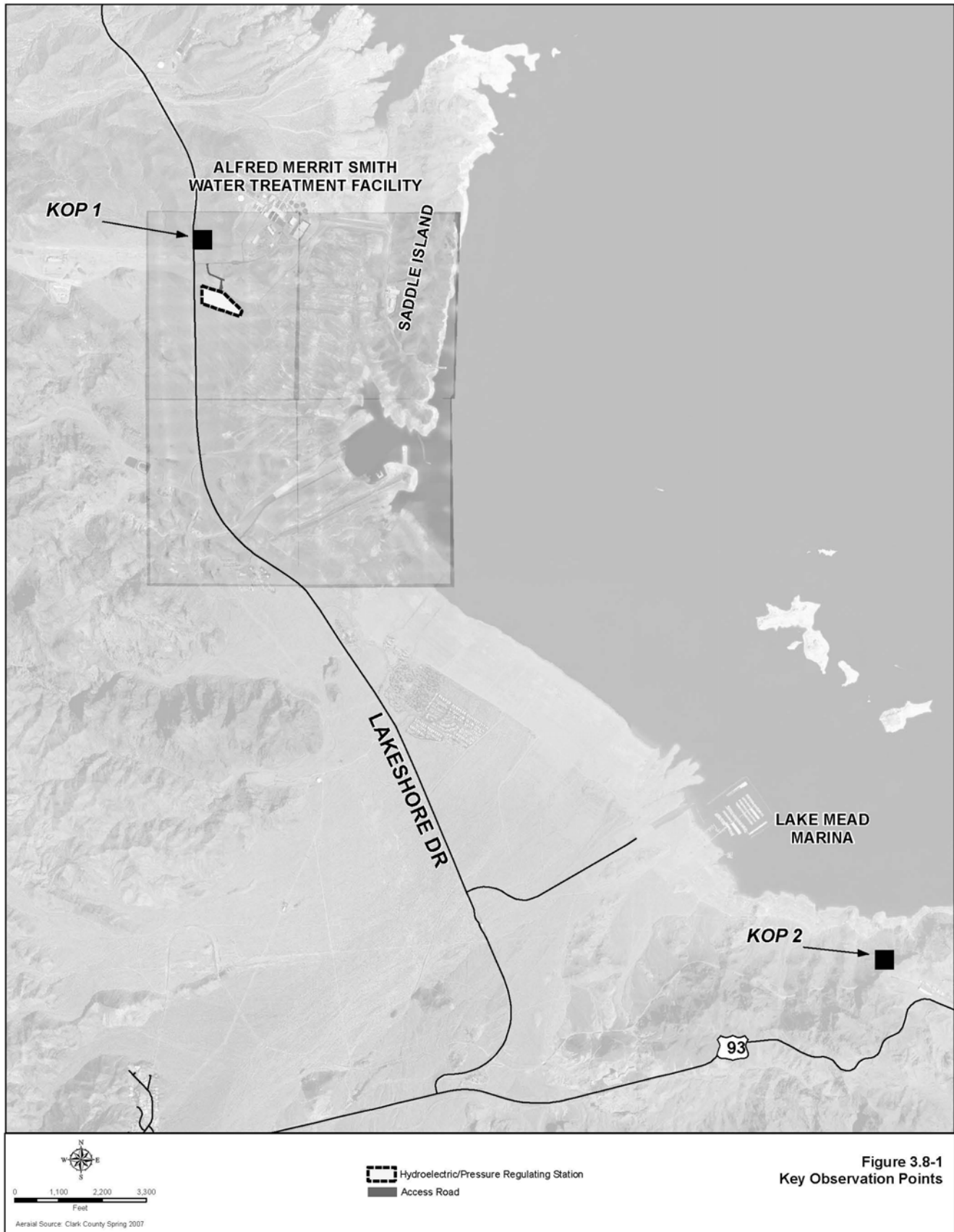
A total of two key observation points (KOPs) were established throughout the project area (see Figure 3.8-1). The KOPs within the LMNRA have been identified as Lakeshore Drive, near the entrance road for AMSWTF, and at Lakeview Point. These KOPs were selected based on the major, potentially sensitive viewer groups that may be affected by the action under study; the types of planned improvements that would have varied visual impact consequences; and the orientation of the viewers toward the project area.

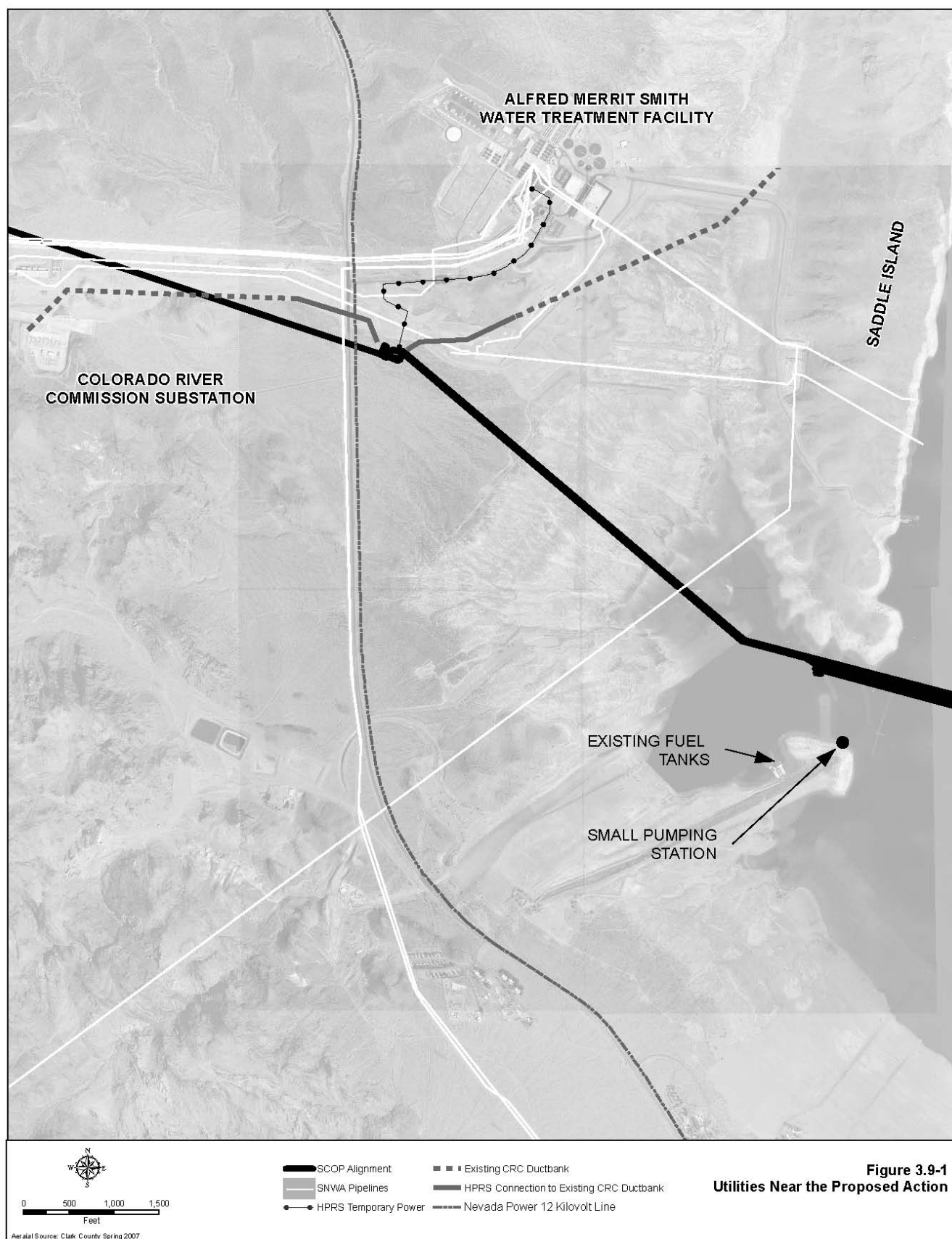
3.9 Utilities

The following utility companies were contacted to obtain the latest available information and to determine whether utilities are located in the project area: Cox Communications, Southwest Gas, Boulder City Public Works, Embarq Phone Service, Nevada Power Company, and SNWA. Cox Communications, Southwest Gas, Boulder City Public Works, and Embarq Phone Service stated that they had no utilities location in the Proposed Action area.

Nevada Power provides 12 kilovolt (kV) transmission service along Lakeshore Drive and provides electrical service to the area previously occupied by the Lake Mead Marina and to the buildings near Pyramid Island Causeway. A small substation is also located adjacent to the public boat ramp, which is located north of the area previously occupied by the Lake Mead Marina. A small pumping station is located on the northeast side of Pyramid Island Causeway. The pump station is no longer in service and a pipeline to the pump station is provided on the Causeway (Figure 3.9-1).

The SNWA owns several pipelines that exist in the Proposed Action area. The locations of these pipelines are shown in Figure 3.9-1.





3.10 Traffic

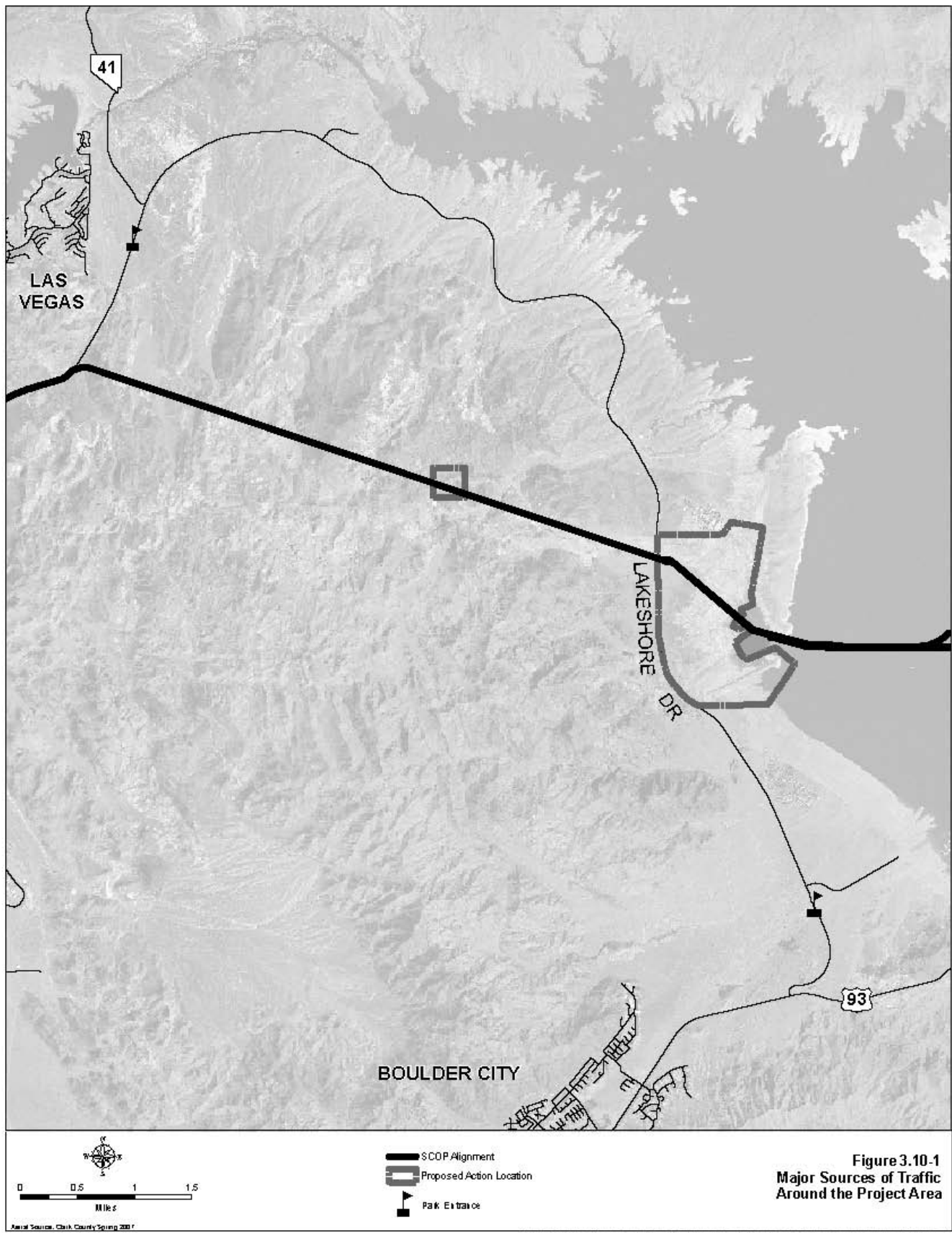
Lakeshore Drive is the main roadway that would be used to access the project area. It is a rural highway that runs north-south along the western shoreline of Lake Mead. The roadway primarily carries recreational vehicles and has one travel lane in each direction, and averages approximately 2,025 vehicles daily (Nevada Department of Transportation [NDOT] 2002) (Table 3.10-1). Lakeshore Drive is 11 miles long and can be accessed from East Lake Mead Parkway or US 93 (see Figure 3.10-1).

East Lake Mead Parkway, also known as SR-564, runs east-west along the southern portion of the Las Vegas Valley through Henderson between US 515 and I-15, and turns into Lakeshore Drive. East Lake Mead Parkway has between two and three travel lanes in each direction and is located northwest of the project area. Many of the vehicles on Lake Mead Parkway are recreational vehicles traveling to Lake Mead, or construction vehicles going to project sites. Lake Mead Parkway is also the primary access route for the Lake Las Vegas community and other east Henderson communities.

A major highway, US 93 extends from Hoover Dam northwest through Boulder City and Henderson. The highway crosses through the LMNRA as shown on Figure 3.10-1. Eventually, US 93 turns into US 95/US 515 north of the Railroad Pass interchange. Traffic on US 93 includes all types of recreational vehicles at Lake Mead, commuter vehicles, construction vehicles, and large commercial trucks traveling between Arizona and Nevada.

Table 3.10-1 Existing Roadway Characteristics

Segment	Volume ¹ (vehicles/day)	Capacity ² (vehicles/day)	Lanes	V/C ³	Level of Service
Lakeshore Drive north of US 93	2,350	15,000	2	0.10	A
Lakeshore Drive north of Lake Mead Fish Hatchery Road	1,700	15,000	2	0.11	A
US 93 South of Lakeshore Drive	13,300	22,500	3	0.59	A
Notes: ¹ Actual volume of traffic. ² Roadway capacity. ³ V/C ratios are calculated based on typical traffic-carrying capacities from the Highway Capacity Manual (Transportation Research Board [TRB] 1985) Table 3.13-3. <i>Level of Service (LOS) is the quality of traffic flow from A through F, A representing free-flow conditions with no congestion or delay and F representing severe congestion with stop-and-go conditions.</i> <i>Sources: NDOT 2002, TRB 1985.</i>					



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4.0 ENVIRONMENTAL CONSEQUENCES

This chapter describes the likely beneficial and adverse effects to the natural and human environment that would result from implementing the alternatives under consideration. Short-term and long-term effects, direct and indirect effects, unacceptable impacts, cumulative effects, and the potential for each alternative to impair park resources are addressed. Interpretation of impacts in terms of their duration, intensity (or magnitude), and context (local, regional, or national effects) are provided where possible.

In addition to determining the environmental consequences of the alternatives, NPS Management Policies (2006) requires the analysis of potential effects to determine if actions would impair park resources. Under the NPS Organic Act and the General Authorities Act, as amended, the NPS may not allow the impairment of park resources and values except as authorized specifically by Congress. The NPS must always seek ways to avoid or minimize, to the greatest degree practicable, adverse impacts on park resources and values. However, the laws do give the NPS management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment to the affected resources and values (Management Policies 1.4.3).

Impairment to park resources and values has been analyzed within this document. Impairment is a concept applied to the park's natural and cultural resources and it is not analyzed for the non-resource topics of park operations, visitor use, utilities, and traffic. Impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is necessary to fulfill specific purposes identified in the enabling legislation or proclamation of the park; is the key to the cultural or natural integrity of the park or to opportunities for enjoyment of the park; or is identified as a goal in the park's general management plan or other relevant NPS planning document. An impact would be less likely to constitute an impairment to the extent that it is an unavoidable result, which cannot be reasonably further mitigated, of an action necessary to preserve or restore the integrity of park resources or values.

The impact threshold at which impairment occurs is not always readily apparent. Therefore, the NPS will apply a standard that offers greater assurance that impairment will not occur. Chapter 1 of NPS Management Policies 2006 requires that park managers evaluate existing or proposed uses and determine whether the associated impacts on park resources and values are acceptable. Unacceptable impacts are impacts that fall short of impairment, but are still not acceptable within a particular park's environment.

Virtually every form of human activity that takes place within a park has some degree of effect on park resources or values, but that does not mean the impact is unacceptable or that a particular use must be disallowed. For the purposes of this analysis, an unacceptable impact is an impact that individually or cumulatively would:

- be inconsistent with a park's purposes or values;
- impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process;
- create an unsafe or unhealthful environment for visitors or employees;
- diminish opportunities for current or future generations to enjoy, learn about, or be inspired by park resources or values; or,
- unreasonably interfere with:

- park programs or activities;
- an appropriate use;
- the atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park; or,
- NPS concessioner or contractor operations or services.

4.1 Public Safety and Experience, and Park Operations

Policies regarding public safety and experience in parks is regulated in the NPS Management Policies, which stipulate that unacceptable impacts to park resources are those impacts that would: create an unsafe or unhealthy environment for visitors or employees; diminish opportunities for current or future generations to enjoy, learn about, or be inspired by park resources; or unreasonably interfere with park programs, activities, or other appropriate park uses. The policies also mandate that the NPS shall seek to provide a safe and healthful environment to all visitors and employees.

The following impact thresholds were established for analyzing impacts to public safety and experience, and park operations:

- *Negligible impacts:* The impact is at the lower level of detection; there would be no measurable change.
- *Minor impacts:* The impact is slight but detectable; there would be a small change.
- *Moderate impacts:* The effect is readily apparent; there would be a measurable impact that could result in a small but permanent change.
- *Major impacts:* The impact is severe; there would be a highly noticeable, permanent measurable change.

4.1.1 Proposed Action

Under the Proposed Action, the land between Boulder Harbor and the AMSWTF would be closed to public access. No hiking trails or shore access exists in this area so this is not expected to have an effect on visitor use and experience. Concrete and HDPE pipe would be manufactured on site, thereby reducing the amount of construction-related traffic on Lakeshore Drive.

Recreational resources and activities, including hiking, mountain bicycling, nature observation, boating, waterskiing, windsurfing, swimming, SCUBA diving, and fishing, would be temporarily unavailable on lands and in waters that are within the project construction area. Additionally, LMNRA visitors may experience inconveniences during construction activities, such as increased noise, dust, localized traffic, travel times and distances, and altered scenic or aesthetic values of the landscape. However, these impacts would be temporary and minor.

Construction activities may necessitate the closing of the boat ramp in Boulder Harbor. To compensate for this loss of boat launching space, an additional ramp would be constructed south of Pyramid Island Causeway. Therefore, although the public would not be able to launch boats in the harbor, the alternate boat ramp south of the Pyramid Island Causeway would provide launch capabilities. Therefore, there would be minimal effect to boaters during the construction of SCOP under the Proposed Action.

The segment of the RMLT in close proximity to the SCOP project area was temporarily re-routed to avoid the majority of the SCOP construction areas. The re-routed RMLT allows the continued use of the trail while keeping members of the public out of the SCOP construction area. Therefore, construction activities would have no impact to the public safety of RMLT users.

Implementation of the Proposed Action would not conflict with approved, adopted, or official policies, goals, or operations of communities or governmental agencies specific to recreational resource plans or activities. There would be minor, temporary impacts to public safety and experience, and park operations from the Proposed Action. Minor, beneficial, long-term impacts to public experience would result from the use of the boat ramp if the NPS decides to make it permanent. Minor, beneficial, long-term impacts to public safety would result from the expansion of the Pyramid Island Causeway. There would be no unacceptable impacts to park operations from implementation of the Proposed Action.

4.1.2 No Action

The No Action Alternative would be the construction and implementation of the Environmentally Preferred Alternative as described in the SCOP Final EIS and the NPS ROD. Therefore, the impacts to public safety and experience, and park operations in the SCOP Final EIS are incorporated by reference (NPS and Reclamation 2006).

Implementation of the No Action alternative would not conflict with approved, adopted, or official policies, goals, or operations of communities or governmental agencies specific to recreational resource plans or activities. There would be minor, temporary impacts to public safety and experience, and park operations from the No Action Alternative. There would be no long-term impacts. There would be no unacceptable impacts to park operations from implementation of the No Action Alternative.

4.2 Geology, Topography, and Soils

NPS Management Policies stipulate that the NPS will preserve and protect geologic resources as integral components of park natural systems. Geologic resources include geologic features and geologic processes. The fundamental policy, as stated in the NPS Natural Resources Management Guideline (NPS-77) is the preservation of the geologic resources of parks in their natural condition whenever possible. Soil resources would be protected by preventing or minimizing adverse potentially irreversible impacts on soils, in accordance with NPS Management Policies. NPS-77 specified objectives for each management zone for soil resources management. These management objectives are defined as:

- 1) Natural zone – preserve natural soils and the processes of soil genesis in a condition undisturbed by humans;
- 2) Cultural zone – conserve soil resources to the extent possible consistent with maintenance of the historic and cultural scene and prevent soil erosion wherever possible;
- 3) Park development zone – ensure that developments and their management are consistent with soil limitations and soil conservation practices; and
- 4) Special use zone – minimize soil loss and disturbance caused by special use activities, and ensure that soils retain their productivity and potential for reclamation.

Zones within the recreation area have been designated in the LMNRA General Management Plan, which provides the overall guidance and management direction for the LMNRA. The NPS Organic Act directs the park to conserve the scenery and the natural objects unimpaired for future generations.

The following impact thresholds were established for analyzing impacts to geology, topography and soils:

- *Negligible impacts:* Impacts have no measurable or perceptible changes in soil structure and occur in a relatively small area.
- *Minor impacts:* Impacts are measurable or perceptible, but localized in a relatively small area. The overall soil structure would not be affected.
- *Moderate impacts:* Impacts would be localized and small in size, but would cause a permanent change in the soil structure in that particular area.
- *Major impacts:* Impact to the soil structure would be substantial, highly noticeable, and permanent.
- *Impairment:* For this analysis, impairment is considered a permanent change in a large portion of the overall acreage of the park, affecting the resource to the point that the park's purpose could not be fulfilled and the resource would be degraded precluding the enjoyment of future generations. The impact would contribute substantially to the deterioration of the park's soils.

4.2.1 Proposed Action

Disturbance of surface soils by construction activities can increase the potential for erosion and transport of soil (sediment) during rainfall/runoff events where surface water runoff crosses the construction areas. Spills of construction materials and/or erosion of disturbed soils with subsequent transport by surface water runoff to Lake Mead could occur.

Approximately 137 acres of land would be disturbed during construction of the Proposed Action, of which, approximately 29 acres would be permanent disturbance. Construction activities within the area of the Proposed Action would result in the increased potential for soil erosion. Specifically, earthwork would require vegetation and topsoil removal, which would increase the potential for wind and water erosion. Large quantities of soil that have not been stabilized, could be transported by surface water runoff and could potentially cause sedimentation loading of waters in Lake Mead.

Storage of fuel and chemicals, and an increased potential for spills during and after construction activities, in combination with runoff, may also pose a potential contamination hazard to soils and surface water.

Construction activities may alter the natural topography of the site. However, the topography and natural ground surface would be restored to its preconstruction condition following installation of the pipeline. Therefore, no permanent impacts to topography would occur with the exception of the HPRS facility and the Pyramid Island Causeway expansion, which are permanent structures.

Due to the size of the LMNRA, and the large amount of protected geologic resources and desert soils, no impairment to soils or geologic resources would occur from this alternative. None of the protected geologic resources would be impacted. Additionally, implementation of BMPs would minimize the potential for soil erosion and contamination. Impacts to geology, topography, and soils would be minor, and long-term due to the construction of the HPRS and the Pyramid Island Causeway expansion. All other impacts to geology, topography, and soils would be minor, and temporary. No unacceptable impacts and no impairment to geology, topography, or soils would occur from the Proposed Action.

4.2.2 No Action

The No Action Alternative would be the construction and implementation of the Environmentally Preferred Alternative as described in the SCOP Final EIS and the NPS ROD. Therefore, the impacts to geology, topography, and soils documented in the SCOP Final EIS are incorporated by reference (NPS and Reclamation 2006).

Approximately 33 acres of land would be disturbed during construction activities associated with the No Action Alternative, of which, approximately 5 acres would be permanent disturbance. The impacts to geology, topography, and soils would be the same as those described for the Proposed Action in Section 4.2.1. No unacceptable impacts and no impairment to geology, topography, or soils would occur from the No Action Alternative.

4.3 Water Resources

The potential impacts to water resources that may result from the construction and operation of the Proposed Action and No Action Alternative are described in this section. This section focuses on the potential impacts to surface water and drainage. Water quality impacts due to effluent were analyzed in the SCOP EIS. The Proposed Action would not change the effluent flows or quality, nor would it further impact groundwater quality, and therefore, these impacts are not analyzed in this EA.

An affect to water resources would be considered adverse if the project:

- Violates any water-quality standards or waste discharge requirements;
- Substantially depletes groundwater supplies or interferes substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;
- Substantially alters the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site;
- Substantially alters the existing drainage pattern of the site or area, including substantially increasing the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;
- Creates or contributes runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or;
- Substantially degrades water quality.

The following impact thresholds were established by the NPS to describe the relative changes in surface water and drainage, water quality, and groundwater resources when compared to baseline conditions.

- *Negligible impacts:* Impacts are not detectable, are well within water-quality standards and/or historical ambient or desired water quality conditions, and have no principal effect on aquatic resources and systems.
- *Minor impacts:* Impacts are detectable but well within water-quality standards and/or historical ambient or desired water quality conditions; impacts are not expected to have an overall effect on aquatic community structure.

- *Moderate impacts:* Impacts are detectable, within water-quality standards, but historical baseline or desired water quality conditions are being altered on a short-term basis; impacts could have an appreciable effect on individual species dynamics, community ecology, or natural aquatic processes.
- *Major impacts:* Impacts are detectable and significantly and persistently alter historical baseline or desired water quality conditions. Water-quality standards are locally approached, equaled, or slightly singularly exceeded on a short-term and temporary basis; impacts have a substantial effect on individual species, community ecology, or natural aquatic processes.
- *Impairment:* Impacts or effects that alter baseline or desired water quality conditions on a long-term basis. Water-quality standards are exceeded several times on a short-term and temporary basis. Impacts result in the deterioration of water quality to the extent that the LMNRA's aquatic life and habitat no longer function as a natural system. Water quality impairment can affect other aspects of the natural environment dependent on the condition of this resource. Aquatic life is affected over the long-term to the point that the LMNRA's purpose cannot be fulfilled and the resource cannot be experienced and enjoyed by future generations.

4.3.1 Proposed Action

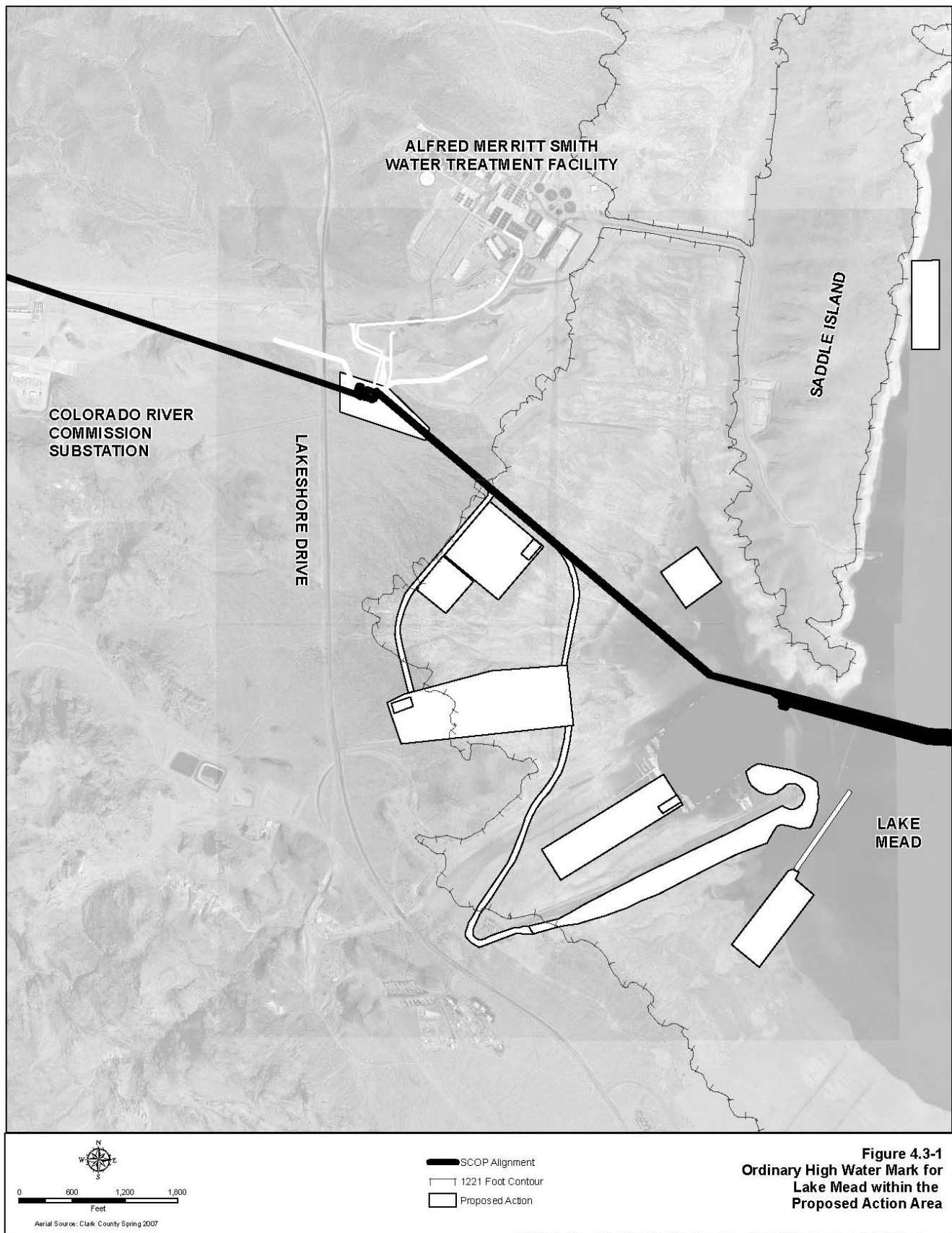
The construction of the Proposed Action involves expansion of the HPRS site, construction staging areas, an HDPE Pipe Production Staging Area, excavated material stockpiles, temporary haul roads, an alternate boat ramp, electrical ductbank and underground utility lines, and expansion of the Pyramid Island Causeway. The impacts of the proposed construction components to surface water are mainly associated with construction activities, and would be temporary. Impacts to surface water that may occur are described in the following paragraphs.

Disturbance of surface soils by construction activities can increase the potential for erosion and transport of soil (sediment) during rainfall/runoff events where surface water runoff crosses the construction areas. Spills of construction materials and/or erosion of disturbed soils with subsequent transport by surface water runoff to Lake Mead could create impacts to water quality.

Open trench construction techniques would be used during the installation of the underground utility lines. Open trenches would require that the easement area be cleared from all vegetation and debris, and a substantial amount of soil be removed or relocated. Construction sites along the alignment would act as a potential source for non-point source pollution because as land is exposed and disturbed, soil erosion rates are dramatically increased. Erosion and sediment transport would be increased as surface water passes over the areas disturbed by the open trench construction. However, this increase in erosion and sediment transport would be relatively minor and similar to surface water passing over unpaved roads that exist throughout the project area.

Construction of the alternate boat ramp would occur within Lake Mead which would result in increasing the turbidity of surrounding waters. A turbidity curtain would be installed around the boat ramp site to isolate silt and minimize silt spread outside the construction area.

A large amount of excavated material would result from construction of the Proposed Action. This excavated material would be placed in areas that are below the OHWM of Lake Mead (Figure 4.3-1). The discharge of dredged or fill material into WOUS is regulated under Section 404 of the CWA. The placement of the excavated material would require a permit under Section 404 of the CWA and Section



10 of the Rivers and Harbors Act of 1899 from the USACE. Compliance with the permit requirements would ensure that impacts to surface water and drainage, and water quality would be minor. Additionally, all Proposed Action components that occur below the OHWM are temporary and would only exist for the duration of SCOP construction. Once construction of SCOP is complete, the area would be restored and revegetated to its preconstruction condition. Therefore, impacts to water resources would be minor and temporary. No unacceptable impacts and no impairment to water resources would occur.

4.3.2 No Action

The No Action Alternative would be the construction and implementation of the Environmentally Preferred Alternative as described in the SCOP Final EIS and the NPS ROD. Therefore, the impacts to water resources documented in the SCOP Final EIS are incorporated by reference (NPS and Reclamation 2006).

The impacts from construction of the No Action Alternative would be similar to the Proposed Action except there would be less impact to surface water due to less cut-and-cover activities, and smaller construction staging areas. The impacts of the No Action Alternative on surface water are mainly associated with construction activities, and would be minor and temporary. No unacceptable impacts and no impairment to water resources would occur.

4.4 Biological Resources

This section contains a discussion of potential impacts that would result from the construction, operation, and maintenance of the Proposed Action and the No Action Alternative related to vegetation, wildlife, and special status species. The management of biological resources in parks is regulated by the NPS *Management Policies* which states that the NPS will maintain as parts of the natural ecosystems of parks all plants and animals native to park ecosystems.

An affect to biological resources would be considered adverse if construction, operation, or maintenance of a project alternative would:

- Adversely affect a federally listed or state protected species of plant, wildlife, or fish;
- Significantly change the existing abundance, diversity, or habitat value of plants, wildlife, or fish, or the distribution of existing plant communities; or
- Substantially interfere with the movement of native resident or migratory wildlife species, established native resident or migratory corridors, or the use of native wildlife nursery/spawning sites.

The following impact thresholds were established for analyzing impacts to vegetation, wildlife, and special status species.

Vegetation

- *Negligible impacts:* Impacts have no measurable or perceptible changes in plant community size, integrity, or continuity.
- *Minor impacts:* Impacts are measurable or perceptible and localized within a relatively small area. The overall viability of the plant community would not be affected and, if left alone, would recover.
- *Moderate impacts:* Impacts would cause a change in the plant community (e.g. abundance, distribution, quantity, or quality); however, the impact would remain localized.

- *Major impacts:* Impacts to the plant community would be substantial, highly noticeable, and permanent.
- *Impairment:* For this analysis, impairment is considered a permanent change in a large portion of the overall acreage of the LMNRA, affecting the resource to the point that the park's purpose could not be fulfilled and the resource would be degraded, precluding the enjoyment of future generations. The impact would contribute substantially to the deterioration of LMNRA's native vegetation.

Wildlife

- *Negligible impacts:* No species of concern is present; no impacts or impacts with only temporary effects are expected.
- *Minor impacts:* Non-breeding animals of concern are present, but only in low numbers. Habitat is not critical for survival; other habitat is available nearby. Occasional flight responses by wildlife are expected, but without interference with feeding, reproduction, or other activities necessary for survival.
- *Moderate impacts:* Breeding animals of concern are present during particularly vulnerable life-stages, such as migration or winter; mortality or interference with activities necessary for survival expected on an occasional basis, but not expected to threaten the continued existence of the species in the LMNRA.
- *Major impacts:* Breeding animals are present in relatively high numbers, and/or wildlife is present during particularly vulnerable life stages. Habitat targeted by actions has a history of use by wildlife during critical periods, but there is suitable habitat for use nearby. Few incidents of mortality could occur, but the continued survival of the species is not at risk.
- *Impairment:* The impact would contribute substantially to the deterioration of natural resources to the extent that the LMNRA's wildlife and habitat would no longer function as a natural system. Wildlife and its habitat would be affected over the long-term to the point that the LMNRA's purpose could not be fulfilled and the resource could not be experienced and enjoyed by future generations.

Special Status Species

- *No effect:* The appropriate conclusion when the action agency determines that its proposed action would not affect a listed species or designated critical habitat.
- *Not likely to adversely affect:* The appropriate conclusion when effects on listed species are expected to be discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur. Based on the best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur.
- *Likely to adversely affect:* The appropriate finding if any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not: discountable, insignificant, or beneficial. If the overall effect of the proposed action is beneficial to the listed species, but is also likely to cause some adverse effects, then the proposed action "is likely to adversely affect" the listed species. If incidental take is anticipated to occur as a result of the proposed action, an "is likely to adversely affect" determination should be made.
- *Is likely to jeopardize listed species/modify critical habitat – (impairment).* The appropriate conclusion when the action agency or the USFWS identify situations in which the proposed action is likely to jeopardize the continued existence of a listed species or adversely modify its critical habitat.

4.4.1 Proposed Action

A discussion of the impacts that may result from implementation of the Proposed Action related to vegetation, wildlife, and special status species is provided in this section.

4.4.1.1 Vegetation

Construction activities would affect vegetation communities and impacts to communities would include loss of or damage to individual plants and the seed bank, grading and compacting native soil, and permanent loss of habitat. Ground-clearing activities could introduce new species or spread non-native, invasive weeds that would compete with native plants for resources.

The Mojave Desert Creosote Scrub and the non-native Tamarisk riparian community would experience the greatest amount of disturbance. The Proposed Action would cause disturbance to approximately 137 acres. Approximately 29 of the 137 acres would be permanently disturbed from construction of the HPRS, access road, and Pyramid Island Causeway expansion. Portions of these areas were previously disturbed from construction activities unrelated to the proposed project.

Maintenance activities would affect vegetation during periodic access to the project area for routine inspection, repairs, structure replacement, and other activities. However, maintenance activities would occur infrequently and predominantly in areas of existing disturbance, therefore impacts from these activities would be negligible.

Tamarisk, a category C noxious weed, is found throughout a substantial portion of the project area. All temporary surface disturbances associated with construction and maintenance of the project may result in the introduction or spreading of noxious weed species. Plant seeds may be transported to the project area by construction vehicles and equipment that has operated in areas where noxious weeds are present. In areas where ground disturbance is substantial, aggressive, non-native weed species may become established. Once established, aggressive weed species can invade adjacent habitats and degrade the condition of the surrounding area.

Impacts to vegetation at the HPRS and access road would be minor and long term because 5-acres of habitat would be permanently lost. Impacts to vegetation at the other construction sites would be minor and temporary. There would be no unacceptable impacts and no impairment to vegetation.

4.4.1.2 Wildlife

Construction activities associated with the Proposed Action would cause temporary and permanent disturbance to wildlife and wildlife habitat in the area. Clearing and grading activities would result in the destruction of wildlife habitat and injury, mortality, or temporary displacement of wildlife, particularly to small mammals and reptiles that are not mobile enough to avoid construction operations. Larger, more mobile wildlife species would avoid the initial clearing activity and move into adjacent areas.

Some animals would be dispersed outside the construction limits and would be susceptible to predators or competitive stress. Displacement would result in a slight population depression adjacent to the project area, but following project completion and successful restoration, wildlife would reoccupy restored portions of the project area. Implementation of the Proposed Action would not eliminate wildlife populations or substantially reduce wildlife population densities or habitat in the region. Therefore, impacts would be temporary and minor.

Increased noise, dust levels, and human activity during construction would potentially disrupt normal foraging and breeding behavior of wildlife species adjacent to the construction area. However, these impacts would be localized and temporary. Existing sources of noise in the project area include recreational activities such as personal watercraft use, automobile traffic, operation of heavy machinery, and other construction-related activities. Project-related noise would not substantially differ from the existing conditions. Therefore, noise impacts to wildlife would be minor.

Construction and implementation of the Proposed Action would result in approximately 137 acres of disturbance, of which, approximately 29 acres would be permanent surface disturbance. However, much of this area is already disturbed from previous unrelated construction activities or public use. Following project construction and site restoration, wildlife would likely reoccupy restored portions of the project area. Therefore, impacts to wildlife would be minor.

Impacts to wildlife resulting from the Proposed Action would be minor and long-term. These long-term impacts would result from the permanent loss of habitat associated with the construction of the HPRS and access road. All other impacts to wildlife would be minor and temporary. Therefore, there would be no unacceptable impacts and no impairment would occur to wildlife in the LMNRA.

4.4.1.3 Special Status Species

Low densities of cacti plants occur throughout the project area associated with the upland vegetation communities. These cacti plants could be impacted by construction activities.

Potential project-related impacts to the Mojave desert tortoise would be minor. No tortoise sign was observed within the project area during field surveys conducted in October 2007. It is not likely that the project area supports a population of desert tortoises. However, tortoises are known to occur in nearby areas, and could feasibly wander onto the project site.

Construction of the Proposed Action would result in the temporary disturbance of approximately 17 acres of desert tortoise habitat. Approximately 5 acres would be permanently disturbed from construction of the HPRS.

No habitat for federally listed Yuma clapper rail or southwestern willow flycatcher occurs in the project area. Therefore, no impacts to the Yuma clapper rail or southwestern willow flycatcher would result from the Proposed Action. Special status plant species were not located in the project area, and therefore would not be impacted.

The project area is potential foraging habitat for several protected bat and raptor species. Foraging habitat would be reduced during construction of the Proposed Action by approximately 137 acres, of which, only 5.7 acres would consist of permanent disturbance. The project area is also potential nesting habitat for several species of migratory birds. However, impacts to these species would be mitigated by performing actions as described in Section 2.4.4.

Impacts to special status species resulting from the Proposed Action would be minor and long-term. These long-term impacts would result from the permanent loss of habitat associated with the construction of the HPRS and access road. All other impacts to special status species would be minor and temporary. There would be no unacceptable impacts and no impairment to special status species.

4.4.2 No Action

The No Action Alternative would be the construction and implementation of the Environmentally Preferred Alternative as described in the SCOP Final EIS and the NPS ROD. Therefore, the impacts to vegetation, wildlife, and special status species documented in the SCOP Final EIS are incorporated by reference (NPS and Reclamation 2006).

Under the No Action alternative approximately 33 acres would be disturbed, of which, approximately 5 acres would be permanent disturbance. The impacts to vegetation, wildlife, and special status species would be minor and long-term from the removal of habitat for the construction of the HPRS. All other impacts to biological resources would be minor and temporary from construction activities. There would be no unacceptable impacts and no impairment to biological resources.

4.5 Air Quality

This section describes the regulatory considerations for air quality that must be addressed as part of this EA. Significance criteria are provided, along with a description of the methodology used for analyzing air quality effects. An analysis of potential air quality impacts is provided for the Proposed Action and the No Action alternative.

The LMNRA is designated as a Class II Prevention of Significant Deterioration (PSD) air quality planning area (Nevada Division of Environmental Protection [NDEP] 2007). Regions designated as Class II PSD areas within the NPS system are required to analyze the impacts of any major new or modified source with the potential to affect the Class II area. Impacts that must be analyzed include the affects to the area's ambient air quality, climate and meteorology, terrain, soils and vegetation, and visibility. The Department of the Interior also has encouraged the NPS to seek protection of "integral vistas" associated with Class II areas in individual permit and plan proceedings (NPS 2007b). Air quality within the region is generally good, but some degradation of air quality occurs in lower elevations of the recreation area. The air pollutants primarily originate from outside LMNRA and can sometimes cause visible smog, which tends to reduce the scenic value of the area.

The SCOP does not emit air pollutants under normal operations. As a result, local and federal requirements that regulate air pollution sources do not apply to the operation and maintenance of the Proposed Action. Construction of the Proposed Action would result in increased dust and emissions from construction equipment. Local air-permitting requirements of Clark County apply to air emission sources that emit air pollutants as part of their normal operations. The NPS requires that local, state, and federal air quality regulatory requirements be met for projects located within the LMNRA. For the purposes of this EA, impacts to air quality are considered adverse if:

- Emissions of any non-attainment pollutant exceed conformity thresholds and generate the need for a conformity determination, or
- Emissions are not in conformance with any Clark County SIP (i.e., cause or contribute to a new violation of any ambient air quality standard, aggravate existing violations of any ambient air quality standards, or delay attainment of air quality standards.)

The following impact thresholds were established for analyzing impacts to air quality.

- *Negligible impacts:* Dust from construction activities can be controlled by mitigation. There is no smell of exhaust and no visible smoke.

- *Minor impacts:* Dust from construction activities is visible for brief periods and only during the work period, but most can be controlled by mitigation. There may be a slight smell of exhaust, and smoke may be visible for brief periods of time.
- *Moderate impacts:* Dust from construction activities is visible for an extended area for an extended period, but is reduced by mitigation. Smoke and exhaust fumes are detectable in high-use areas.
- *Major impacts:* Dust from construction activities is visible for an extended area for an extended amount of time, and mitigation is unable to alleviate the conditions. Smoke and exhaust fumes are easily detectable for extended periods of time in a large area.
- *Impairment:* Air quality is degraded over the long-term to the point that the LMNRA's purpose could not be fulfilled and the visitor experience is negatively affected.

Fugitive dust emissions (PM_{10}) are generated during construction from disturbance of soils and movement of construction equipment and motor-vehicle traffic on paved and unpaved surfaces. Soils located in the project area are classified by the Soil Conservation Service as having a slight to low probability of producing fugitive dust emissions (Soil Conservation Service 1985). Fugitive dust emissions from soil disturbances and movement of construction equipment were estimated using the amount of soil to be disturbed, air quality control requirements of Clark County for active construction sites, implementation of mitigation measures required by Clark County, and emission factors based on Section 13.2.3 of AP-42 (EPA 1995).

The annual emissions from construction equipment exhaust were compared to major source-threshold levels. Major source-threshold levels set the value at which exhaust emissions from a stationary source must undergo more in-depth review to determine if exhaust emissions would result in deterioration of the ambient air. The same activities and equipment used in the SCOP EIS were used for this analysis. The conformity threshold is the annual aggregate total of emissions that authorized activities shall not equal or exceed.

4.5.1 Proposed Action

Air pollutant emissions would be generated during construction of the various components and, to a much lesser degree, by operations and management (O&M) activities after construction has been completed. Impacts to air quality following construction are not evaluated in this section because O&M activities have the potential for minimal emissions. Therefore, quantifying these emissions would not be practical. Potential air pollutants resulting from construction of the Proposed Action include CO, Nitrogen Oxides (NO_2), SO_2 , VOCs, PM_{10} , $PM_{2.5}$, and hazardous air pollutants (HAPs). Air pollutant emissions arise from combustion of fuels in construction and maintenance equipment, fugitive dust (PM_{10}) emissions from vehicular traffic on paved and unpaved areas, and dust emissions from soil and rock disturbances.

Compliance with Clark County dust control requirements would limit the potential air quality impacts on nearby properties. Therefore, impacts to air quality from fugitive dust emissions would be minor. The fugitive dust emissions expected to be generated from the Proposed Action are shown in Table 4.5-1.

Table 4.5-1 Fugitive Dust Emissions Estimated for the Proposed Action Alternative

Source	Construction Disturbance (ft ²)	Uncontrolled PM ₁₀ Emissions ¹ (tons)	PM ₁₀ Emissions after Controls ² (tons)
HPRS	435,600	4.2	2.1
HPRS Access Road	32,234	0.3	0.2
AMSWTF Electrical Ductbank and Water Line	127,950	1.2	0.6
HPRS Connection to Existing CRC Ductbank	118,135	1.1	0.6
Construction Staging Areas	1,318,126	12.7	6.4
Temporary Haul Roads	649,915	6.3	3.1
Excavated Materials Stockpiles	1,103,374	10.6	5.3
HDPE Pipe Fabrication Facility	657,756	6.3	3.2
Pyramid Island Causeway Expansion	996,652	9.6	4.8
HDPE Pipe Temporary Storage Area	0	0	0
Public Boat Ramp	435,600	4.2	2.1
NRMT3 – East Staging Area	130,680	1.3	0.6
Total	6,006,022	57.8	29.2
Conformity Threshold (tons/year)			70
¹ Uncontrolled PM ₁₀ emissions were calculated using a factor of 0.42 tons PM ₁₀ per acre of soil disturbance. The value of 0.42 tons PM ₁₀ per acre comes from the PM ₁₀ SIP for Clark County (Clark County 2001).			
² Controls include those required in the Clark County SIP for construction activities (Clark County 2001). Controlled PM ₁₀ emissions were calculated using an emission factor of 0.21 tons PM ₁₀ per acre.			

Short-term impacts to air quality resources are anticipated as a result of construction equipment exhaust emissions. The construction equipment and techniques used for the Proposed Action would be the same as that used for other portions of the alignment as described in the SCOP Final EIS (NPS and Reclamation 2006). There would be a temporary, but detectable change in ambient air pollutant concentrations. However, the change is not expected to cause or contribute to an exceedance of the NAAQS, does not produce objectionable odors, or exceed recommended exposure standards. The impact would be temporary and occur only during construction activities. The project must comply with Clark County requirements regarding dust control and other measures designed to reduce pollutant emissions during construction. Compliance with existing regulatory requirements would minimize adverse air quality impacts from construction activities. Therefore, impacts to air quality would be minor and temporary. Implementation of the Proposed Action would not result in unacceptable impacts or impairment of LMNRA's air quality resources.

4.5.2 No Action

The No Action Alternative would be the construction and implementation of the Environmentally Preferred Alternative as described in the SCOP Final EIS and the NPS ROD. Therefore, the impacts to air quality documented in the SCOP Final EIS are incorporated by reference (NPS and Reclamation 2006).

The fugitive dust emissions shown in Table 4.5-2 represent the amount of dust generated by the various construction activities for the SCOP components relevant to the No Action Alternative. However, traffic entering and exiting the construction area would be greater under this alternative since HDPE and cement would be manufactured off site and imported. This would result in an increase in the amount of exhaust emitted from vehicles. Therefore, impacts to air quality from implementation of the No Action

Alternative would be minor and temporary. There would be no unacceptable impacts and no impairment to air quality resources from implementation of the No Action Alternative.

Table 4.5-2 Fugitive Dust Emissions Estimated for the No Action Alternative

Source	Construction Disturbance (ft ²)	Uncontrolled PM ₁₀ Emissions ¹ (tons)	PM ₁₀ Emissions after Controls ² (tons)
HPRS	217,800	2.1	1.1
HPRS Access Road	0	0	0
Electrical Ductbank and Water Line	0	0	0
Construction Staging Areas	130,680	1.3	0.6
Temporary Haul Roads	0	0	0
Excavated Materials Stockpiles	1,103,374	10.6	5.3
HDPE Pipe Fabrication Facility	0	0	0
Pyramid Island Causeway Expansion	0	0	0
HDPE Pipe Temporary Storage Area	0	0	0
Public Boat Ramp	0	0	0
NRMT3 – East Staging Area	0	0	0
Total	1,451,854	14.0	7.0
Conformity Threshold (tons/year)			70
¹ Uncontrolled PM ₁₀ emissions were calculated using a factor of 0.42 tons PM ₁₀ per acre of soil disturbance. The value of 0.42 tons PM ₁₀ per acre comes from the PM ₁₀ SIP for Clark County (Clark County 2001). ² Controls include those required in the Clark County SIP for construction activities (Clark County 2001). Controlled PM ₁₀ emissions were calculated using an emission factor of 0.21 tons PM ₁₀ per acre.			

4.6 Noise

The implementation of the Proposed Action or No Action Alternative could affect the noise environments of lands under the jurisdiction of the Clark County or the NPS. Sensitive receptors exist as mentioned in Section 3.6 within the LMNRA boundaries. Each government entity regulates noise and vibration through the establishment of ordinances and policies that are identified in Section 3.6 and the following subsections.

Impacts involving noise would be considered adverse if an alternative would result in:

- A substantial permanent increase in ambient noise levels,
- Exposure of people to noise levels in excess of local standards,
- Exposure of people to excessive ground-borne vibrations, or
- A substantial temporary or periodic increase in ambient noise levels in excess of local standards.

The following impact thresholds were established for analyzing impacts to noise.

- *Negligible impacts:* The impact is at the lower level of detection; there would be no measurable change.
- *Minor impacts:* The impact is slight but detectable; there would be a small change.

- *Moderate impacts:* The impact is readily apparent; there would be a measurable change that could result in a small but permanent change.
- *Major impacts:* The impact is severe; there would be a highly noticeable, permanent measurable change.
- *Impairment:* The frequency, magnitude, and duration of the impact contribute substantially to the deterioration of the park's natural soundscape to the extent that the natural soundscape, other park resources and values, visitor experience, and resources in the region are significantly compromised. The natural soundscape is affected over the long-term to the point that the park's purpose is not fulfilled and the resource cannot be experienced and enjoyed by future generations

The noise and vibration impacts from the proposed project are presented in the following subsections. Potential noise and vibration impacts to biological resources are presented in Section 4.3.

4.6.1 Proposed Action

Major construction phases would consist of site preparation, installation (grubbing and grading, and cut and cover activities), and site cleanup. Noise emissions would vary with each phase of construction depending on the construction activity and the associated equipment. Site preparation would require the use of combustion-engine powered earth-moving equipment. Equipment would include: backhoes, scrapers, dump trucks, graders, and front-end loaders. Engine noise, vehicle movement, and rock and debris removal would dominate noise emissions during site preparation. The underground utilities installation would involve the use of trenchers, earth-moving equipment, equipment and materials delivery, and dewatering pumps, that all emit substantial noise.

Temporary increases in noise levels within the NPS boundaries may be expected. Noise impacts would be moderately loud to LMNRA users that get within 50 ft (15 m) of the construction activities (Table 3.6-1). Mitigation measures would be implemented to minimize potential noise impacts to LMNRA visitors. All activities would be conducted in accordance with NPS requirements. Long-term operational noise impacts would be minor and not notably impact LMNRA visitors or residents.

Additions of the construction staging areas, HDPE Pipe Fabrication Facility, temporary haul roads, and public boat ramp within the LMNRA would cause a temporary increase to noise levels. The HPRS near the AMSWTF would be located partially below grade in an area that is not considered a high-use visitor location. Therefore, operation of the HPRS would not create adverse noise impacts. Construction and operation of the additions and modifications would result in minor and temporary impacts to noise. Implementation of the Proposed Action would not result in unacceptable impacts or impairment of LMNRA's natural soundscape..

4.6.2 No Action

The No Action Alternative would be the construction and implementation of the Environmentally Preferred Alternative as described in the SCOP Final EIS and the NPS ROD. Therefore, the impacts to noise documented in the SCOP Final EIS are incorporated by reference (NPS and Reclamation 2006).

The potential impacts resulting from the No Action Alternative would be similar to those described for the Proposed Action. Impacts from noise would be minor and temporary. Implementation of the No Action Alternative would not result in unacceptable impacts or impairment of LMNRA's natural soundscape..

4.7 Cultural Resources

The impacts to cultural resources that may result from the construction and operation of the Proposed Action and No Action alternative are described in this section.

Various federal laws and regulations, including the NHPA, ensure consideration of cultural resources. For the purposes of this EA, impacts to cultural resources would be considered unacceptable if the Proposed Action resulted in an adverse effect to any characteristic of a resource eligible for listing on the NRHP including relevant features of its environment or use. Impacts to cultural resources are assessed through various measures. Four criteria were used in identifying the potential impacts to cultural resources.

- Identifying the nature and location of all elements of the alternatives,
- Comparing those locations with identified cultural resources,
- Determining the known or potential significance of cultural resources that may be affected, and
- Assessing the extent and intensity of the effects.

The following impact thresholds were established for analyzing impacts to cultural resources:

- *Negligible impacts:* No potentially eligible or listed properties are present; no direct or indirect impacts.
- *Minor impacts:* Potentially eligible or listed properties are present; no direct impacts or impacts with only temporary effects are expected.
- *Moderate impacts:* Potentially eligible or listed properties are present; indirect impacts may occur or, in the case of structures, activity is limited to rehabilitation conducted in a manner that preserves the historical and architectural value of the property.
- *Major impacts:* Potentially eligible or listed properties present; direct impacts include physical destruction, damage, or alteration of all or part of a property. A property is isolated from its setting, or there is alteration of the character of a property's setting when that character contributes to its eligibility. Visual, audible, or atmospheric elements are introduced that are out of character with the property or alter its setting. Neglect of a property results in its deterioration or destruction.
- *Impairment:* Loss, destruction, or degradation of a cultural property, resource, or value to the point that it negatively affects the park's purpose and visitor experience.

4.7.1 Proposed Action

No significant cultural resources were located within the project area. A segment of the SCIRR not yet evaluated for eligibility of inclusion on the NRHP was located within the project area. This segment, however, has been impacted by erosion and other construction activities. It is not likely that this new segment qualifies for inclusion on the NRHP. Since there are no potentially NRHP-eligible or listed properties present within the project area, impacts to cultural resources would be negligible. Impacts would result if new, undiscovered cultural resources were uncovered during construction activities. However, policies are in place that regulate the handling of newly discovered artifacts, and therefore, there would only be negligible long-term impacts to cultural resources. There would be no unacceptable impacts and no impairment to cultural resources within LMNRA.

4.7.2 No Action

The No Action Alternative would be the construction and implementation of the Environmentally Preferred Alternative as described in the SCOP Final EIS and the NPS ROD. Therefore, the impacts to cultural resources documented in the SCOP Final EIS are incorporated by reference (NPS and Reclamation 2006).

Impacts from the implementation of the No Action Alternative would be the same as those described in Section 4.7.1. Since there are no potentially NRHP-eligible or listed properties present within the project area, impacts to cultural resources would be negligible. Impacts would result if new, undiscovered cultural resources were uncovered during construction activities. Impacts to cultural resources would be negligible and long-term. There would be no unacceptable impacts and no impairment to cultural resources within LMNRA.

4.8 Visual Resources

The BLM VRM Guidelines (BLM 1986a) and the BLM Manual Handbook - *Visual Resource Contrast Rating* (BLM 1986b) were used to analyze impacts associated with implementation of the proposed alternatives as mentioned in section 3.8. The BLM VRM guidelines were used for the visual resource assessment because the NPS does not have any formalized guidance procedures for assessing visual resources. The visual resource inventory process provides NPS managers with a means for determining visual values.

The visual resource classes that have been assigned based on scenic quality, sensitivity level, and delineation of distance zones to the various areas within the project vicinity are Class II, Class III, and Class IV. Inventory classes provide the basis for considering visual values and are informational in nature (BLM 1986a).

- *Class II:* The objective of Class II is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic element of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
- *Class III:* The objective of Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape can be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. As in Class II, changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
- *Class IV:* The objective of Class IV is to provide management activities that require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

For purposes of this EA, impacts to visual resources would be adverse if the action being considered would:

- Cause inconsistencies related to the management objectives of the associated applicable VRM class;
- Result in a strong degree of contrast;
- Substantially change the overall visual character of the project region; or

- Substantially alter the view from a scenic point, vista, corridor, or other sensitive area.

The following impact thresholds were established for analyzing impacts to visual resources.

- *Negligible impacts:* The impact is at the lower level of detection; there would be no measurable change.
- *Minor impacts:* The impact is slight but detectable; there would be a small change.
- *Moderate impacts:* The impact is readily apparent; there would be a measurable change that could result in a small but permanent change.
- *Major impacts:* The impact is severe; there would be a highly noticeable, permanent measurable change.
- *Impairment:* The impact occurs within an extremely visually sensitive area. The impact is not compatible with the overall visual character of the area, the landscape is unable to absorb the impact, and mitigation measures are unsuccessful in alleviating the impact. The impact contributes substantially to the degradation of the overall scenic quality to the point that the park's purpose cannot be fulfilled, and resource degradation precludes the enjoyment of future generations.

4.8.1 Proposed Action

Impacts for the Proposed Action are discussed in terms of what would be seen from KOPs at Lakeshore Drive and Lakeview Point. The view of the project area from Lakeshore Drive is classified as Class II. The objective of Class II is to retain the existing character of the landscape. Views from Lakeshore Drive are expected to be temporarily impacted due to the addition of the HDPE Pipe Fabrication Facility, expansion of the HPRS Site, installation of underground utility lines, construction staging areas, and temporary topsoil and material stockpile areas. These activities would entail the removal of vegetation that would create a contrasting straight line of brown against the surrounding gray-green Mojave Desert scrub vegetation community. This line would provide a temporary rise in the degree of contrast, and possibly attract the attention of the casual observer. Views from Lakeshore Drive would be temporarily impacted by the presence of large construction equipment and construction activities occurring in the project area.

Impacts to views in the vicinity of the project area would occur as a result of blowing dust caused by construction activities. Dust control BMPs would be implemented during construction. Impacts from dust would be minor. Additionally, the impacts to visual resources during construction would be temporary. Restoration of the project area would be implemented upon completion of construction.

The view from Lakeview Point is also classified as Class II. Temporary and permanent impacts to visual resources would be similar as those from the KOP at Lakeshore Drive (Figure 2.2-1). There would be no inconsistencies related to management objectives of this VRM Class after construction is completed.

The HPRS facility and the Pyramid Island Causeway expansion would be permanently visible from Lakeshore Drive and Lakeview Point (Figure 4.8-2). However, the HPRS would be designed architecturally to blend with the surroundings and the Pyramid Island Causeway expansion would occur in a previously disturbed area. Therefore, although the HPRS and the Pyramid Island Causeway expansion would attract the attention of the casual observer, it would not change the overall visual character of the area.

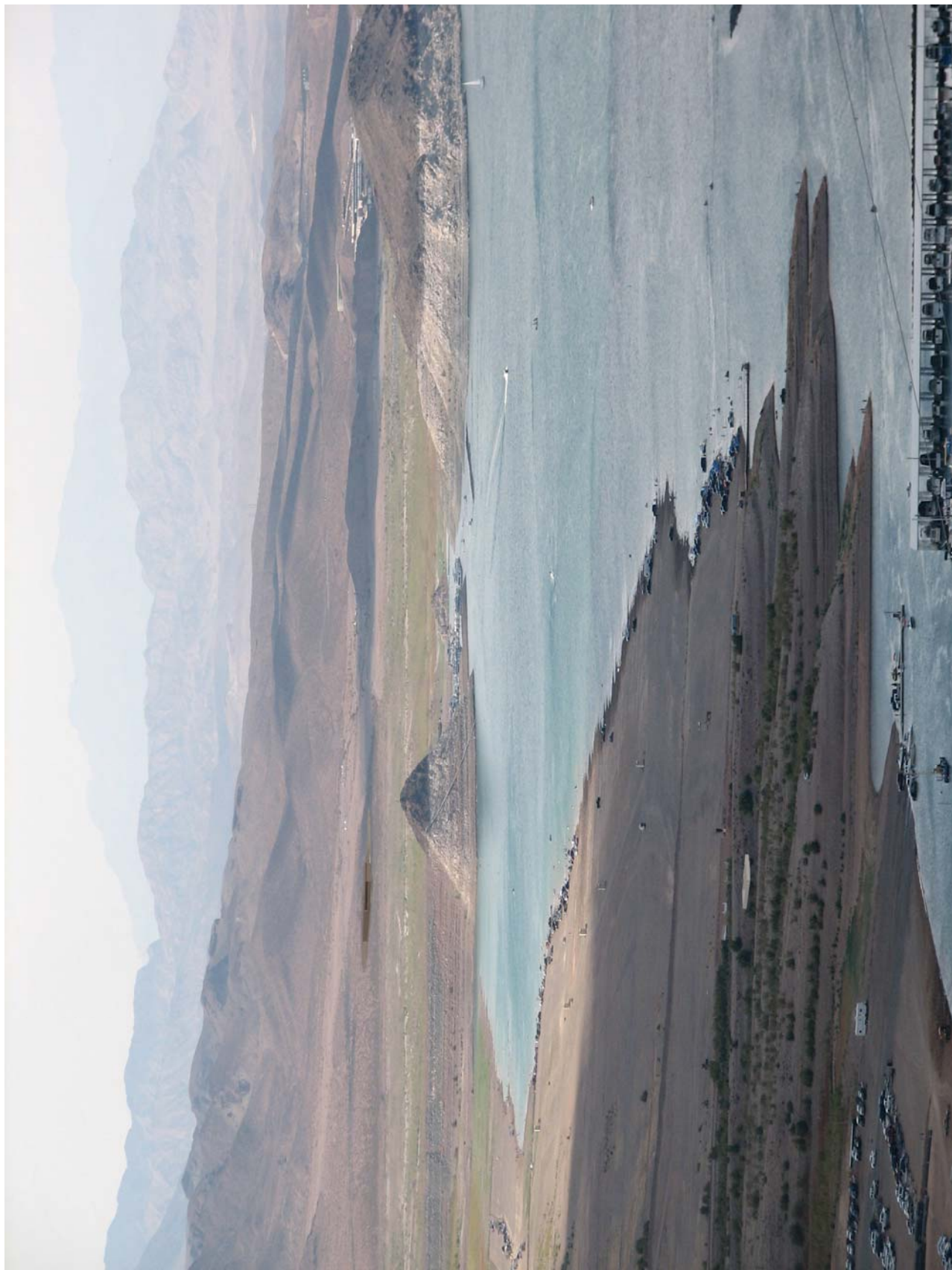


Figure 4.8-2 Architectural Rendering of the HPRS Facility as seen from KOP 2

There would be minor long-term impacts to the overall visual character, scenic points, vistas, corridors, or other sensitive areas following completion of the construction activities. The intended uses and purposes of the LMNRA would not be affected by the Proposed Action. No unacceptable impacts and no impairment to LMNRA resources would occur.

4.8.2 No Action

The No Action Alternative would be the construction and implementation of the Environmentally Preferred Alternative as described in the SCOP Final EIS and the NPS ROD. Therefore, the impacts to visual resources documented in the SCOP Final EIS are incorporated by reference (NPS and Reclamation 2006).

Impacts to visual resources from implementation of the No Action Alternative would be similar to those described for the Proposed Action. The primary impacts would be temporary and would occur during the construction phase of the project. There would be minor long-term impacts to visual resources that would result from the construction of the HPRS facility. There would be no unacceptable impacts and no impairment to visual resources from implementation of the No Action Alternative.

4.9 Utilities

The following sections describe the potential impacts related to utilities resulting from construction and operation of the Proposed Action and No Action Alternative.

The following impact thresholds were established for analyzing impacts to utilities:

- *Negligible impacts:* The impact is at the lower level of detection; there would be no measurable change.
- *Minor impacts:* The impact is slight but detectable; there would be a small change.
- *Moderate impacts:* The effect is readily apparent; there would be a measurable impact that could result in a small but permanent change.
- *Major impacts:* The impact is severe; there would be a highly noticeable, permanent measurable change.

4.9.1 Proposed Action

Under the Proposed Action, utility impacts are expected to be minimal. The new HPRS facility will connect to the existing CRC substation and the AMSWTF. This would provide a source of green energy within the park. Potable water and electricity will also be provided via these connections. During construction of SCOP, construction trailers will connect to existing telephone, sewer, and electrical lines.

All utility companies identified as potentially having utilities located in the vicinity of the Proposed Action have been contacted prior to completing the final design phases for the project. No portions of the Proposed Action will cross existing underground utilities or cause damage to existing utilities. Minor, beneficial impacts would result from implementation of the Proposed Action because the green energy produced by the HPRS would be available for use within the park. There would be no unacceptable impacts to utilities from implementation of the Proposed Action.

4.9.2 No Action

The No Action Alternative would be the construction and implementation of the Environmentally Preferred Alternative as described in the SCOP Final EIS and the NPS ROD. Therefore, the impacts to utilities documented in the SCOP Final EIS are incorporated by reference (NPS and Reclamation 2006).

There would be no unacceptable impacts to utilities from implementation of the No Action Alternative.

4.10 Traffic

The following sections provide an analysis of the traffic-related impacts associated with the Proposed Action and No Action Alternative. This section defines significance criteria for determining traffic-related impacts for the Proposed Action and No Action Alternative and describes mitigation measures, if appropriate.

An impact would be considered adverse if:

- The maximum traffic-carrying capacity of an affected roadway would be exceeded as a result of implementation of an alternative; or
- Project traffic exacerbates conditions on a roadway that already exceeds its maximum traffic carrying capacity.

The analysis addresses both the short-term construction and long-term operational impacts of the Proposed Action and No Action Alternative.

The analysis of impacts is based upon daily traffic volume criteria. The criteria considered includes daily traffic-carrying capacities of potentially impacted roadways, daily trip generation of project activities, projected background traffic levels, and the combination of the daily trip generation of the project activities, and the background traffic levels. Understanding the relationship of daily capacity as a maximum sustained rate of traffic flow for the specified time period requires knowledge of the existing roadway capacity. A detailed traffic analysis was not conducted for this project; therefore specific traffic data for most roads and intersections potentially impacted by the Proposed Action and No Action Alternative are not available.

The following impact thresholds were established for analyzing impacts to traffic:

- *Negligible impacts:* The impact is at the lower level of detection; there would be no measurable change.
- *Minor impacts:* The impact is slight but detectable; there would be a small change.
- *Moderate impacts:* The effect is readily apparent; there would be a measurable impact that could result in a small but permanent change.
- *Major impacts:* The impact is severe; there would be a highly noticeable, permanent measurable change.

4.10.1 Proposed Action

The Proposed Action would not cross any major roads or highways. Therefore, no major highways or arterials are planned for closure. Employee vehicles and construction equipment accessing the project

area may generate potential traffic-related impacts during construction, operation, and maintenance of the Proposed Action. Construction-related traffic (employee vehicles and construction equipment) would access the site via Lakeshore Drive and US 93. Construction related traffic will not be allowed to access the site via Lake Mead Parkway. The Level of Service (LOS) is a measure of roadway congestion that ranges from LOS A (least congested) to LOS F (most congested)), and is used to describe how good or bad traffic is projected to be as a result of implementing a proposed project. The LOS for roadways accessing the Proposed Action area is generally categorized as LOS A. Many of the components in the Proposed Action are proposed in order to reduce the number of vehicles that would be required to enter and exit the LMNRA. An on-site concrete batch plant located within the Construction Staging Area would minimize the number of trucks accessing the construction area from Lakeshore Drive. In addition, fabrication of the HDPE pipe near the site of use would further reduce construction-traffic impacts by minimizing the number of trucks delivering materials to the project area. The use of temporary haul roads within the project area would further minimize construction traffic on Lakeshore Drive. Therefore, the LOS for Lakeshore Drive and US 93 would not be impacted by an increase in construction-related traffic.

It is estimated that construction of the Proposed Action could take up to 42 months. Several Proposed Action components would be constructed simultaneously. Temporary lane restrictions may be needed to allow construction vehicles to maneuver. However, lane restrictions will be limited to seasons when visitor use is low. Therefore, the LOS would be unchanged and short-term impacts from construction would be minor.

Existing traffic at the intersection of US 93 and Lakeshore Drive is currently LOS Category A, but is approaching LOS Category B (see Table 3.10-1). However, it would take several hundred additional vehicles per day for this to occur, and the number of additional vehicles that would be in the area during construction of the Proposed Action would not be enough to change the LOS category.

Maintenance of the pipeline and ancillary facilities would be required throughout the operation of the pipeline. However, the frequency of site visits and number of vehicles would be minimal. Therefore, long-term operational impacts to traffic from the Proposed Action would be negligible. There would be no unacceptable impacts to traffic from implementation of the Proposed Action.

4.10.2 No Action

The No Action Alternative would be the construction and implementation of the Environmentally Preferred Alternative as described in the SCOP Final EIS and the NPS ROD. Therefore, the impacts to traffic documented in the SCOP Final EIS are incorporated by reference (NPS and Reclamation 2006).

Potential traffic-related impacts during construction, operation, and maintenance of the No Action Alternative would be similar to those described for the Proposed Action. It is estimated that construction of the No Action Alternative could take up to 69 months. Temporary impacts on traffic would be greater than the Proposed Action because there would be no on-site concrete batch or HDPE Pipe Fabrication Facility. The absence of these on-site facilities would increase the number of trucks accessing the project area. In addition, temporary haul roads within the project area would not be constructed. Construction traffic would use Lakeshore Drive to travel from one construction site to another within the project area. Therefore, impacts to traffic from construction of the No Action Alternative would be minor and temporary. There would be no unacceptable impacts to traffic from implementation of the No Action Alternative.

4.11 Cumulative Impacts

Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time. Cumulative impacts are most likely to arise when a relationship exists between a proposed action and other actions that have, or are expected, to occur in a similar location, time period, or involving similar actions. Projects in close proximity to the proposed action would be expected to have more potential for cumulative impacts than those more geographically separated.

The cumulative effects assessment in this EA focuses on addressing two fundamental questions:

- Does a relationship exist so the impacts from the Proposed Action might affect or be affected by the impacts of the other actions?
- If such a relationship exists, does this assessment reveal any potentially adverse impacts not identified when the Proposed Action is considered alone?

4.11.1 Past, Present, and Reasonably Foreseeable Future Actions

The following activities have been identified, in combination with the Proposed Action, to have the potential for contributing to cumulative impacts on resources within the vicinity of the Proposed Action.

Alfred Merritt Smith Water Treatment Facility

The AMSWTF was constructed in 1971 to treat drinking water for the Las Vegas Valley. No further additions or modifications are planned for the reasonably foreseeable future at the AMSWTF. However, this plant may contribute to cumulative impacts of LMNRA's resources through daily O&M procedures. Resources that may be affected include air quality, visitor experience, and traffic resources. These impacts are expected to be long-term and minor.

Upgrades to Water and Sewer Lines near Boulder Harbor

The NPS is proposing to replace water distribution systems and sewer collection systems at eight marinas in the LMNRA, including Boulder Beach. The potential impacts of this proposed activity were analyzed in the EA *Replace Water Distribution Systems and Sewer Collection Systems Parkwide* dated September 2005 (NPS 2005a). Upgrading water and sewer collection systems will require excavation of old lines and associated facilities, removal and disposal of old piping and other components, installation of new lines and components, and backfill and compaction after installation of new lines and components.

Approximately 610 ft of new waterline will be placed in previously undisturbed areas near Boulder Beach and 13,530 ft of water and sewer lines will be placed in previously disturbed areas. This will result in approximately 9.5 acres of temporary disturbance. It is anticipated that this work will be completed in August 2008 (NPS 2005a). These planned activities will have negligible to minor, temporary impacts on soils, biological resources, cultural resources, public safety and experience, and park operations. Some long-term beneficial impacts to biological resources, public safety and experience, and park operations would result from the completion of this project.

LMNRA Activities in Response to Low Lake Levels

The LMNRA has developed a plan to address the low water conditions affecting lake access. The plan was outlined in the September 2005 *General Management Plan Amendment* EA (NPS 2005b), and presents a strategy for maintaining current boating capacity by extending launch ramps and shifting marinas. Specific planned or recently occurring activities in the vicinity of the Proposed Action include: the relocation of Lake Mead Marina to Hemenway Harbor (this action was completed in February 2008); construction of a new launch ramp at Boulder Harbor to accommodate launch operations below 1,085 ft;

and grading of a new paved road to provide access to the new launch ramp. These activities would have long-term minor impacts to soils, biological resources, surface water drainage, noise, air quality, and cultural resources. The impacts would be the result of increased construction activity and increased surface disturbance associated with the construction of a new boat ramp and access points.

SNWA Intake Structure Modifications

The SNWA is constructing modifications to the intake structures located at Saddle Island in Lake Mead. An EA was prepared for this project by SNWA in 2006 (SNWA 2006). A new intake structure will be constructed that allows for withdrawal of drinking water from a location deeper in Lake Mead. The intake structure is located in Boulder Basin, northeast of Saddle Island. The intake pumping station is located on the north side of the Saddle Island Causeway. There will be temporary and localized impacts to air quality and noise during construction activities as well as an increase in construction traffic along Lakeshore Drive. In addition, spoils from tunneling or open-cut construction will require transport and disposal.

SNWA South Valley Facilities Expansion

SNWA is proposing to expand existing raw water transmission and treatment facilities to meet the increasing water demands of the southern Las Vegas Valley. The existing Raw Water Pumping System collects water from Lake Mead via the Intake No. 2 and a series of pumping stations pump the water uphill through the River Mountains tunnel to the River Mountains Water Treatment Facility. The expansion of the Raw Water Pumping System would include a new 120-inch diameter pipeline and additional pumps to redistribute the raw water. Construction of the South Valley Facilities Expansion is anticipated to begin in 2011, which would overlap the anticipated construction schedule of the SCOP. Potential impacts resulting from the Raw Water Pumping System expansion would include: impacts to geology, topography, and soils from excavation of the pipeline; increased impacts to air quality due to additional construction equipment in the area; increase in the noise level due to construction activities; and an increase in the amount of construction-related traffic accessing the area.

4.11.2 Potential Cumulative Impacts

The cumulative impacts of past, present and reasonably foreseeable future actions in conjunction with the Proposed Action would have short and long-term minor impacts to park resources. There are no major, adverse impacts from the Proposed Action or other planned actions to resources that are:

- Necessary to fulfill specific purposes identified in the LMNRA's establishing legislation;
- Key to the natural or cultural integrity of LMNRA or to opportunities for enjoyment of LMNRA or;
- Identified as a goal in the LMNRA's General Management Plan or other relevant NPS planning documents.

Public Safety and Experience, and Park Operations

The duration of the Proposed Action construction would likely overlap with construction schedules for other projects in the vicinity. However, the LMNRA has completed the realignment of the portion of the RMLT that would cross SCOP construction activities. LMNRA has also completed the relocation of the Lake Mead Marina to Hemenway Harbor, a location that would not be impacted by SCOP construction. Therefore, the impacts to public safety and park operations would be minimal. No cumulative impacts to visitor use and park operations are anticipated. Some impacts to visitor experience would occur from each of the activities occurring in the vicinity of the Proposed Action. Impacts would result from views that are obstructed by construction equipment and a reduction of the acreage of natural landscapes in the area. However, most of the land affected by projects occurring in the vicinity of the Proposed Action would be restored to their preconstruction condition. Therefore, cumulative impacts to public experience would be minimal and temporary.

Geology, Topography, and Soils

Ground-disturbing activities required for the construction of new facilities have the potential to affect geology, topography, and soils. Development and construction from other projects in the region, and associated disturbance to soil, increases the potential for erosion. However, once construction is completed, developed areas typically experience less soil erosion than undeveloped areas. Additionally, with implementation of recommended mitigation measures, effects to geology, topography, and soils would be temporary and minor. No cumulative impacts are expected to occur.

Water Resources

The Proposed Action and other nearby activities would result in impacts to surface water flows. These impacts would result from construction activities that occur in washes that drain into Lake Mead. This would result in an increase in sediment. However, impacts to water resources are mitigated through compliance with required construction permits. These permit requirements would also be applicable to other construction activities in the vicinity of the Proposed Action. Therefore, cumulative impacts to water resources are not anticipated.

Biological Resources

Implementation of the Proposed Action would result in construction-related impacts to biological resources located within the construction footprint. The duration of the Proposed Action would likely overlap in schedule with other planned projects in the vicinity. Construction of each project would disturb vegetation, disperse wildlife from construction areas, increase disturbance to soils creating suitable environs for noxious weeds, and increase disturbance to desert tortoise habitat. The cumulative impacts of other construction actions in conjunction with the Proposed Action would have short- and long-term minor impacts to biological resources within the Proposed Action area resulting from the temporary and permanent loss of habitat. Mitigation measures have been proposed, including land reclamation plans, removal and storage of topsoil and vegetation, noxious weed management, pre-construction surveys for sensitive species, and seasonal restrictions on construction. Therefore any potential cumulative impacts to biological resources would be temporary and minor.

Air Quality

The construction of the Proposed Action and SNWA's intake structure modifications would have several elements that would overlap in time. Due to the close proximity of the various construction projects cumulative impacts to air quality are anticipated. These impacts will result from an increase in PM₁₀ generation in disturbed areas and during excavations and increased emissions from construction equipment and construction traffic. These projects are not expected to exceed conformity thresholds for PM₁₀ emissions when considered in combination. Therefore, the cumulative impacts of these projects would be temporary and minor.

Noise

The Proposed Action would generate noise and vibration impacts along the project alignment from the operation of heavy equipment and other construction-related activities. Some portions of construction would likely overlap with other projects in the vicinity. A number of projects listed in Section 4.11.1 would also generate short-term noise during construction. This would result in a cumulative impact to noise and vibration. Mitigation measures have been proposed that would limit the potential effects of short-term construction noise on sensitive receptors. For this reason and because of the short duration and localized nature of construction noise, cumulative impacts to noise and vibration would be minor and temporary.

Cultural Resources

The Proposed Action may affect known and previously unknown cultural resources in the project area. Mitigation measures have been proposed as a means of limiting potential impacts to both known and unknown resources. The projects listed in section 4.11.1 have a similar potential to impact cultural resources. However, regulatory processes and mitigation measures are in place that would require specific actions to minimize impacts to important cultural resources. Therefore, no cumulative impacts to cultural resources are anticipated.

Visual Resources

Visual resource impacts of the Proposed Action consist of temporary impacts to views during construction and permanent impacts to views resulting from construction of the HPRS and expansion of the Pyramid Island Causeway. The impacts to visual resources from the other projects in the area would occur only during construction activities. Temporary impacts would be mitigated through post-construction land restoration activities. Therefore, the cumulative impacts to visual resources would be minor and temporary.

Utilities

The Proposed Action would not have any impacts to utilities within the area. Therefore, there would not be any cumulative impacts when considered in conjunction with other projects.

Traffic

Implementation of the Proposed Action is not anticipated to affect local traffic. The projects mentioned in Section 4.11.1 would generate relatively minor levels of traffic during construction. However, depending on the timing and location of the various projects, the incremental addition of new traffic, particularly heavy trucks, may have a cumulative impact on local traffic conditions. This cumulative impact would occur over the entire construction period of the Proposed Action and then subside after construction is complete.

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5.0 CONSULTATION AND COORDINATION

A 30-day public scoping period occurred from October 13, 2007 through November 15, 2007. The public was notified of the scoping period through ads in the *Las Vegas Review Journal* on October 14, 2007, the *Henderson Home News* on October 11, 2007, and through area media on October 4, 2007. No scoping comments were received.

Newspaper ads announcing the availability of this EA were published in the *Las Vegas Review Journal* and *Henderson Home News*. The availability of this EA was also announced through a press release issued by NPS to area media and posted on the park website. This document will be available on the LMNRA internet website (<http://www.nps.gov/lame>) and on the PEPC website at <http://parkplanning.nps.gov/>. Copies of the EA are also available at area libraries, including: Boulder City Library, Clark County Library, Las Vegas Public Library, Sunrise Public Library (Las Vegas), and University of Nevada- Las Vegas James R. Dickinson Library. Individuals and organizations may request a copy of the EA in writing or by phone.

A copy of the EA can be obtained by direct request to:

National Park Service, LMNRA
Attention: Michael Boyles
601 Nevada Way
Boulder City, Nevada 89005
Telephone: (702) 293-8978
Facsimile: (702) 293-8008

Comments on this EA must be submitted during the 30-day public review and comment period. Comments on the EA can be submitted in writing to the address above or on the NPS Planning, Environment, and Public Comment (PEPC) website at <http://parkplanning.nps.gov/>. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can request the NPS to withhold your personal identifying information from public review, the NPS cannot guarantee that it will be done.

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6.0 LIST OF PREPARERS AND CONTRIBUTORS

The following individuals were primarily responsible for the content of the EA, or for providing management leadership during the development and production phases of this document.

PBS&J

Breckenridge, Billye, PBS&J

B.A. Environmental Studies

Years Experience: 9

EA Contribution: Senior Review, QA/QC

Garncarz, Scott, PBS&J

B.A. Environmental Science

Years Experience: 3

EA Contribution: Biological surveys, 404 surveys

Goodwin, Kimberley, PBS&J

B.S. Zoology

Years Experience: 7

EA Contribution: Biological Surveys, Biological Resources, Air Quality, Cultural Resources, Water Resources, Public Safety and Experience and Park Operations, Utilities, Cumulative Impacts, Maps/Graphics, Document Formatting, Comment Resolution

Jackson, James, PBS&J

M.S. Physical Geography

B.A. Geology

Years Experience: 20

EA Contribution: Maps/Graphics, GIS

Sanders, Holly, PBS&J

B.S. Environmental Biology

Years Experience: 2

EA Contribution: Biological Surveys, Noise, Visual Resources, Utilities, Traffic, List of Preparers

Zeus Environmental

Stewart, Carrie, Zeus

M.A. Computer Resources and Information Systems

M.A. Human Resources and Development

B.S. Geology

Years Experience: 20

EA Contribution: Chapter 1, Chapter 2, Chapter 3 Introduction, Geology & Soils, Public Notices, Senior Review

Black & Veatch

Hughes, Aled, P.E., Black & Veatch
B.Eng. Civil Engineering
Years Experience: 17
EA Contribution: Senior Review

Yankovich, David, P.E., Black & Veatch
M.S. Civil Engineering
B.S. Civil Engineering
Years Experience: 24
EA Contribution: Senior Review

National Park Service

Boyles, Michael, NPS
M.S. Biological Sciences
B.S. Biological Sciences
Years Experience: 14
EA Contribution: Federal Review

Clean Water Coalition

Karafa, Doug, CWC
EA Contribution: Client Review

Subconsultants

HRA Inc. Las Vegas, NV
EA Contribution: Cultural Surveys, Cultural Resources

7.0 REFERENCES

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Appendix A

Species Lists



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Nevada Fish and Wildlife Office
4701 North Torrey Pines Drive
Las Vegas, Nevada 89130
Ph: (702) 515-5230 ~ Fax: (702) 515-5231

March 13, 2008
File No. 84320-2008-SL-0184
1-5-05-SP-511

Ms. Holly Sanders, Environmental Scientist
PBS&J
2270 Corporate Circle, Suite 100
Henderson, Nevada 89074


Dear Ms. Sanders:

Subject: Species List for the Systems Conveyance and Operations Program, Nevada

This responds to your letter dated January 30, 2008, requesting information regarding federally listed species for the Systems Conveyance and Operations Program (SCOP). This project is within the area that a species list was previously issued to PBS&J by the U.S. Fish and Wildlife Service (Service) on August 1, 2005 (Service File No. 1-5-05-SP-511). With the exception of the bald eagle (*Haliaeetus leucocephalus*) since it is no longer listed as threatened under the Endangered Species Act of 1973, as amended, we determined that the previous list is still current. Therefore, please refer to the August 1, 2005, list for information regarding federally listed species within the subject project area and consider effects to these species in your project analysis, and for any other projects occurring on Bureau of Reclamation and National Park Service lands near SCOP. We have enclosed a copy of the list for your convenience.

Please reference File No. 84320-2008-SL-0184 in future correspondence concerning this species list. If you have any questions regarding this correspondence or require additional information, please contact Leilani Takano in the Nevada Fish and Wildlife Office in Las Vegas at (702) 515-5230.

Sincerely,


For Robert D. Williams
Field Supervisor

Enclosure





United States Department of the Interior

FISH AND WILDLIFE SERVICE
Nevada Fish and Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, Nevada 89502
(775) 861-6300 ~ Fax: (775) 861-6301



August 1, 2005
File No. 1-5-05-SP-511

Ms. Carrie Stewart, SCOP EIS Project Manager
PBS&J
2270 Corporate Circle, Suite 100
Henderson, Nevada 89074-6382

Dear Ms. Stewart:

Subject: Species List Request for the Systems Conveyance and Operations
Program, in Clark County, Nevada

In response to your letter received on July 5, 2005, the following federally-listed species may occur in the subject project area:

- Southwestern willow flycatcher (*Empidonax traillii extimus*), endangered
- Bonytail chub (*Gila elegans*), endangered
- Bonytail chub designated critical habitat
- Desert tortoise (*Gopherus agassizii*) (Mojave population), threatened
- Bald eagle (*Haliaeetus leucocephalus*), threatened
- Yuma clapper rail (*Rallus longirostris*), endangered
- Razorback sucker (*Xyrauchen texanus*), endangered
- Razorback sucker designated critical habitat
- Yellow-billed cuckoo (*Coccyzus americanus*) (Western U.S. DPS), candidate
- Relict leopard frog (*Rana onca*), candidate

This list fulfills the requirement of the Fish and Wildlife Service (Service) to provide information on listed species pursuant to section 7(c) of the Endangered Species Act of 1973, as amended (Act), for projects that are authorized, funded, or carried out by a Federal agency. Critical habitat has been designated for the desert tortoise and proposed for the southwestern willow flycatcher in southern Nevada. However, the critical habitat areas for the desert tortoise and southwestern willow flycatcher do not occur in the proposed project area or would not be affected by the proposed action. The yellow-billed cuckoo and relict leopard frog are candidate species that receive no legal protection under the Act, but could be proposed for listing in the near future. Consideration of these species during project planning may assist species conservation efforts and may prevent the need for future listing actions.

The Nevada Fish and Wildlife Office no longer provides species of concern lists. Most of these species for which we have concern, are also on the sensitive species list for Nevada maintained by the State of Nevada's Natural Heritage Program (Heritage). Instead of maintaining our own list, we adopted Heritage's sensitive species list and are partnering with them to provide distribution data and information on the conservation needs for the sensitive species to agencies and project proponents. The mission of Heritage is to continually evaluate the conservation priorities of native plants, animals, and their habitats, particularly those most vulnerable to extinction or are in serious decline. Consideration of these sensitive species and exploring management alternatives early in the planning process can provide long-term conservation benefits and avoid future conflicts.

For a list of sensitive species by county, visit Heritage's website at www.heritage.nv.gov. For a specific list of sensitive species that may occur in the project area, you can obtain a data request form from the website or by contacting Heritage at 901 S Stewart St., Ste 5002, Carson City, NV 89701, 775-684-2900. Please indicate on the form that your request is being obtained as part of your coordination with the Service under the Act. During your project analysis, if you obtain new information or data for any Nevada sensitive species, we request that you provide the information to Heritage at the above address. Furthermore, certain species of fish and wildlife are classified as protected by the State of Nevada (see <http://www.leg.state.nv.us/NAC/NAC-503.html>). Before a person can hunt, take, or possess any parts of wildlife species classified as protected, they must first obtain the appropriate license, permit, or written authorization from the Nevada Department of Wildlife (visit <http://www.ndow.org> or call 702-486-5127).

We are concerned that the project may impact the threecorner milkvetch (*Astragalus geyerii* var. *triquetrus*), Sticky buckwheat (*Eriogonum viscidulum*), and Las Vegas bearpoppy (*Arctomecon californica*) species listed as sensitive under the Heritage Program. These species are also listed as critically endangered by the State of Nevada under Nevada Revised Statutes (NRS) 527.260-.300. For these species, no member of its kind may be removed or destroyed at any time by any means except under special permit issued by the State Forester (NRS 527.270). Requests for permits should be directed to the State Forester, Nevada Division of Forestry at 2525 South Carson Street, Carson City, Nevada 89701, (775) 684-2500. It should be noted that many of the plant species on the State's critically endangered list are not federally listed by the Service because of the protection afforded to them under the State law. Consideration of these species during project planning and early coordination with the State is important to assist with species conservation efforts and to prevent the need for Federal listing actions in the future.

We are also concerned that the project may impact the banded Gila monster (*Heloderma suspectum cinctum*), a species listed as sensitive under the Heritage Program and protected under Nevada State law. The banded Gila monster resides primarily in the Mojave desert scrub and salt desert scrub ecosystems in southern Nevada, southeastern California, southwestern Utah, and western Arizona. The Gila monster is one of only two venomous lizard species in the world. Gila monsters are difficult to locate as they spend the majority of the year in underground

Ms. Carrie Stewart

File No. 1-5-05-SP-511

burrows; however, illegal collection, construction of roads, and loss of habitat continue to threaten this sensitive species. Given that the Gila monster may occur within the project area, we encourage you to minimize project impacts to any existing populations and suitable habitat for this species.

Please reference File No. 1-5-05-SP-511 in future correspondence concerning this species list. This list supersedes the species list provided on February 12, 2003, Service file No. 1-5-03-SP-467. If you have any questions regarding this correspondence or require additional information, please contact Heather Adams in our Southern Nevada Field Office at (702) 515-5230.

Sincerely,

Cynthia T. Marting

for Robert D. Williams
Field Supervisor

RECEIVED



JIM GIBBONS
Governor

STATE OF NEVADA
DEPARTMENT OF WILDLIFE

1100 Valley Road
Reno, Nevada 89512
(775) 688-1500 • Fax (775) 688-1595

KENNETH E. MAYER
Director

DOUG HUNT
Deputy Director

SOUTHERN REGION
4747 Vegas Drive
Las Vegas, Nevada 89108
(702) 486-5127 • Fax (702) 486-5133

February 26, 2008

NDOW-SR# 08-230/231

Ms. Holly Sanders
Environmental Scientist
PBS&J
2270 Corporate Circle, Suite 100
Henderson Nevada 89074-6382

RE: New Environmental Assessments (EA) for the Systems Conveyance and Operations Program (SCOP) at Lake Mead, Specific SCOP Reaches on National Park Service and U.S. Bureau of Reclamation Lands

Dear Ms. Sanders:

The Nevada Department of Wildlife (Department) is pleased to respond to your request for assistance in gathering data pertinent to the re-alignment of certain reaches of the SCOP on both National Park Service and U.S. Bureau of Reclamation lands. The information would be considered as part of environmental assessments under development for the respective land managers. The major geographical features along the project area are the riparian zone within the Las Vegas Wash and the rocky outcrops, steep slopes, crevasses and canyons of the River Mountains.

Table 1 is a species list tailored for the project areas indicating wildlife of conservation priority. All species receive some measure of protection by the State of Nevada and have elevated management interest to the Department. The State's regulatory classification and a brief habitat description are included. Please be aware that birds protected under the Migratory Bird Treaty Act are also protected under State law but are too numerous to list herein. Hence, other protected wildlife not listed in the table and which utilize the project area would also be subject to any potential impacts resulting from the project. Further, Table 1 is not considered definitive as other wildlife of conservation priority, but which do not yet have elevated regulatory status, may also utilize the project area. Please consult the Nevada Wildlife Action Plan online at www.ndow.org. On the home page scroll over to the "Wildlife and Habitat" tab, then select "Conservation Plans and Programs."

Avoiding potential conflicts with protected wildlife in the project area include adherence to the Department's Gila monster encounter protocols (enclosed) and the following considerations for potentially nesting birds. Project activities should be scheduled outside bird breeding and nesting seasons which roughly occur between March 15th and July 15th. If seasonal avoidance is not practicable, then survey for nests by a qualified biologist prior to commencement of construction activities is recommended. Survey methods should include ground nesting migratory species additional to those nesting in shrubs, trees or cliffs. In the event an active nest (containing eggs or young) is discovered or frequently attended by adult birds (e.g. in the case of Golden Eagle), a buffer area around the nest appropriate for the involved species must be identified and avoided until young birds fledge. This measure would be consistent with preventive actions advocated by the U.S Fish & Wildlife Service



concerning migratory species protected under the Migratory Bird Treaty Act. However, breeding and nesting by the Phainopepla initiates earlier than for most other migrants, and is usually underway by February. Consideration for Phainopepla habitat should be made and whenever possible, construction activities should avoid disturbance to mesquite and acacia woodland, especially those supporting mistletoe infestations. A brochure for avoiding conflicts with the Burrowing Owl is available from the U.S. Fish & Wildlife Service.

Table 1. Species Afforded State Protection (per NAC 502.020 and Chapter 503 of Nevada Administrative Codes) that May be Found within the Vicinity of the SCOP Re-alignment Project Areas

Species	Classification	Scientific Name	General Habitat Type
Desert Tortoise	Threatened	<i>Gopherus agassizii</i>	Creosote/bursage communities, washes, uses/digs burrows
Gila Monster	Protected	<i>Heloderma suspectum</i>	Back faces of washes, canyon bottoms, caves, burrows
Yuma Capper Rail	Endangered	<i>Rallus longirostris yumanensis</i>	Cattails, bulrushes, grassy or reedy marshland and similar conditions along riparian zones of rivers and streams
Loggerhead Shrike	Sensitive	<i>Lanius ludovicianus</i>	Desert salt scrub, playas
Burrowing Owl	Protected	<i>Athene cunicularia</i>	Creosote/bursage communities, washes, uses/digs burrows
Prairie Falcon	Protected	<i>Falco mexicanus</i>	Cliff faces, escarpments, canyons
Peregrine Falcon	Endangered	<i>Falco peregrinus</i>	Cliff faces, canyons, rocky slopes, washes
Phainopepla	Protected	<i>Phainopepla nitens</i>	Mistletoe infested mesquite & acacia woodland
Southwestern Willow Flycatcher	Endangered	<i>Empidonax traillii</i>	Shrub and tree thickets along riparian of stream banks and over water
Allen's Lappet Eared Bat	Protected	<i>Idionycteris phyllotis</i>	Desert washes, Rocky slopes, Springs, other open waters
Brazilian Free Tailed Bat	Protected	<i>Tadarida brasiliensis</i>	"
California Leaf Nosed Bat	Sensitive	<i>Macrotus californicus</i>	"
Fringed Myotis	Protected	<i>Myotis thysanoides</i>	"
Pallid Bat	Protected	<i>Antrozous pallidus</i>	"
Spotted Bat	Threatened	<i>Euderma maculatum</i>	"
Townsend's Big Eared Bat	Sensitive	<i>Corynorhinus townsendii</i>	Springs, riparian, artificial water sources; roosts in caves
Western Mastiff Bat	Sensitive	<i>Eumops perotis</i>	"
Western Red Bat	Sensitive	<i>Lasiurus blossevillei</i>	"
Desert Bighorn Sheep	Big Game	<i>Ovis canadensis nelsoni</i>	High cliffs, rocky outcrops, canyons

Because the Department's authority is limited to wildlife, references to other sensitive species (e.g. plants) can be found online in the Nevada Natural Heritage database (www.heritage.nv.gov). State laws and authorities addressing plants are in Nevada Revised Statutes chapters 525 and 528 and corresponding Nevada Administrative Codes chapters 527 and 528. Mr. John Jones of the Nevada Division of Forestry can be contacted at (702) 486-5123.

Should there be opportunity for the Department to further assist in NEPA development or if there are questions or concerns about this letter, please contact Roddy Shepard, Habitat Biologist, at (702) 486-5127 x3613, or by e-mail at rshepard@ndow.org.

Sincerely,



D. Bradford Hardenbrook
Supervising Habitat Biologist

RS/DBH

cc: Files, NDOW



NEVADA DEPARTMENT OF WILDLIFE Southern Region

4747 W. Vegas Drive, Las Vegas, Nevada 89108
Phone: 702-486-5127, Fax: 702-486-5133



1 November 2007

GILA MONSTER STATUS, IDENTIFICATION AND REPORTING PROTOCOL FOR OBSERVATIONS

Gila Monster Status

- Per Nevada Administrative Code 503.080, the Gila monster (*Heloderma suspectum*) is classified as a Protected reptile.
- Per Nevada Administrative Codes 503.090, and 503.093, no person shall capture, kill, or possess any part thereof of Protected wildlife without the prior written permission by the Nevada Department of Wildlife (NDOW).

This species is rarely observed relative to other species which is the primary reason for its Protected classification by the State of Nevada. The USDI Bureau of Land Management has recognized this lizard as a sensitive species since 1978. Most recently, the Gila monster was designated as an *Evaluation* species under Clark County's Multiple Species Habitat Conservation Plan (MSHCP). The evaluation designation was warranted because inadequate information exists to determine if mitigation facilitated by the MSHCP would demonstrably cover conservation actions necessary to insure the species' persistence without protective intervention as provided under the federal Endangered Species Act.

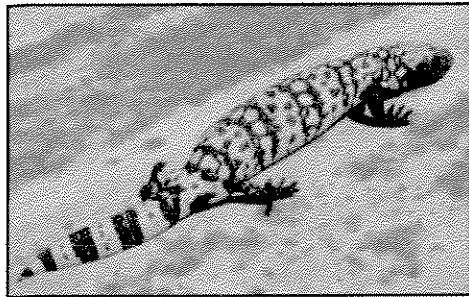
The banded Gila monster (*H.s. cinctum*) is the subspecies that occurs in Clark, Lincoln, and Nye counties of Nevada. Found mainly below 5,000 feet elevation, its geographic range approximates that of the desert tortoise (*Gopherus agassizii*) and is coincident to the Colorado River drainage. Gila monster habitat requirements center on desert wash, spring and riparian habitats that inter-digitate primarily with complex rocky landscapes of upland desert scrub. They will use and are occasionally encountered out in gentler terrain of alluvial fans (bajadas). Hence, Gila monster habitat bridges and overlaps that of both the desert tortoise and chuckwalla (*Sauromalus ater*). Gila monsters are secretive and difficult to locate, spending >95% of their lives underground.

The Gila monster is the only venomous lizard endemic to the United States. Its behavioral disposition is somewhat docile and avoids confrontation. But it will readily defend itself if threatened. Most bites are considered illegitimate and consequential to harassment or careless handling. These lizards are not dangerous unless molested or handled and should not be killed.

Scant information exists on detailed distribution and relative abundance in Nevada. The Nevada Department of Wildlife (NDOW) has ongoing management investigations addressing the Gila monster's status and distribution, hence additional distribution, habitat, and biological

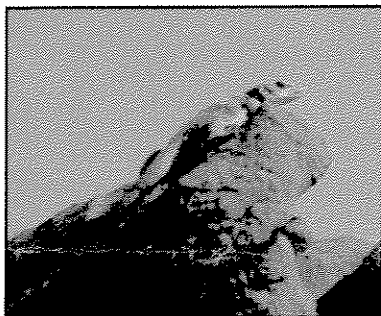
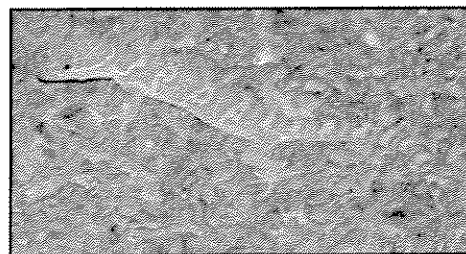
information is of utmost interest. In assistance to gathering additional information about Gila monsters in Nevada, NDOW will be notified whenever a Gila monster is encountered or observed, and under what circumstances (see Reporting Protocol below).

Identification



The Gila monster is recognizable by its striking black and orange-pink coloration and bumpy, or beaded, skin. In keeping with its namesake, the banded Gila monster retains a black chain-link, banded appearance into adulthood. Other lizard species are often mistaken for the Gila monster. Of these, the non-venomous western banded gecko (*Coleonyx variegatus*) and non-venomous chuckwalla are most frequently confused with the Gila monster. All three species share the same habitats.

The western banded gecko is often mistakenly identified as a baby or juvenile Gila monster. Western banded geckos do have a finely granular skin and pattern that can be suggestive of the Gila monster to the untrained eye. However, western banded gecko heads are somewhat pointed at the snout and the relatively large eyes have vertical pupils. Snouts of Gila monsters are bluntly rounded and the smallish eyes have round pupils. Newly hatched Gila monsters are about 5-6 inches long with a vivid orange and black, banded pattern. Adult western banded geckos are at best cream to yellow and brown in pattern and do not exceed 5 inches.



Both juvenile and adult chuckwallas are commonly confused with the Gila monster. Juvenile chuckwallas have an orange and black, banded tail. Although banding of the tail fades as chuckwallas mature, their large adult size (up to 17 inches) rivals that of the Gila monster. Adult chuckwallas have a body shape somewhat suggestive of the Gila monster, but they lack the coarsely beaded skin and black and orange body pattern of the Gila monster.

Reporting Protocol for Gila Monster Observations

Field workers and personnel in southern Nevada should at least know how to: (1) identify Gila monsters and be able to distinguish it from other lizards such as chuckwallas and western banded geckos (see Identification section above); (2) report any observations of Gila monsters to the Nevada Department of Wildlife (NDOW); (3) be alerted to the consequences of a Gila monster bite resulting from carelessness or unnecessary harassment; and (4) be aware of protective measures provided under state law.

- 1) Live Gila monsters found in harms way on the construction site will be captured and then

detained in a cool, shaded environment ($\leq 85^{\circ}\text{F}$) by the project biologist or equivalent personnel until a NDOW biologist can arrive for documentation, marking and obtaining biological measurements and samples prior to releasing. Despite that a Gila monster is venomous and can deliver a serious bite, its relatively slow gate allows for it to be easily coaxed or lifted into an open bucket or box carefully using a long handled instrument such as a shovel or snake hook (*Note: it is not the intent of NDOW to request unreasonable action to facilitate captures; additional coordination with NDOW will clarify logistical points*). A clean 5-gallon plastic bucket w/ a secure, vented lid; an 18"x 18"x 4" plastic sweater box w/ a secure, vented lid; or, a tape-sealed cardboard box of similar dimension may be used for safe containment. Additionally, written information identifying the mapped capture location, Global Positioning System (GPS) coordinates in Universal Transverse Mercator (UTM) using the North American Datum (NAD) 83 zone 11. Date, time, and circumstances (e.g. biological survey or construction) and habitat description (vegetation, slope, aspect, substrate) will also be provided to NDOW.

- 2) Injuries to Gila monsters may occur during excavation, blasting, road grading, or other construction activities. In the event a Gila monster is injured, it should be transferred to a veterinarian proficient in reptile medicine for evaluation of appropriate treatment. Rehabilitation or euthanasia expenses will not be covered by NDOW. However, NDOW will be immediately notified of any injury to a Gila monster and which veterinarian is providing care for the animal. If an animal is killed or found dead, the carcass will be immediately frozen and transferred to NDOW with a complete written description of the discovery and circumstances, date, time, habitat, and mapped location (GPS coordinates in UTM using NAD 83 Z 11).
- 3) Should NDOW's assistance be delayed, biological or equivalent acting personnel on site should detain the Gila monster out of harms way until NDOW personnel can respond. **The Gila monster should be detained until NDOW biologists have responded.** Should NDOW not be immediately available to respond for photo-documentation, a digital (5 megapixel or higher) or 35mm camera will be used to take good quality images of the Gila monster in situ at the location of live encounter or dead salvage. The pictures will be provided to NDOW at the address above or the email address below along with specific location information including GPS coordinates in UTM using NAD 83 Z 11, date, time and habitat description. Pictures will show the following information: (1) Encounter location (landscape with Gila monster in clear view); (2) a clear overhead shot of the entire body with a ruler next to it for scale (Gila monster should fill camera's field of view and be in sharp focus); (3) a clear, overhead close-up of the head (head should fill camera's field of view and be in sharp focus).

Please contact NDOW Biologist Polly Conrad at (702) 486-5127 x3718
or by e-mail at pconrad@ndow.org for additional information regarding these protocols.



Nevada Natural Heritage Program

Nevada Department of Conservation and Natural Resources

Richard H. Bryan Building

901 South Stewart Street, suite 5002 • Carson City, Nevada 89701-5245, U.S.A.

tel: (775) 684-2900 • internet: <http://heritage.nv.gov>



06 February 2008

Holly Sanders
PBS & J
2270 Corporate Circle, Suite 100
Henderson, NV 89074

RE: Data request received: 05 February 2008

Dear Ms. Sanders:

We are pleased to provide the information you requested on endangered, threatened, candidate, and/or at risk plant and animal taxa recorded within or near the National Park Service EA for Systems Conveyance and Operations Program project area. We searched our database and maps for the following, a five kilometer radius around:

Township 22S Range 64E Sections 02, 03, 10, 11, 14 and 15

The enclosed printout lists the taxa recorded within the given area. Please be aware that habitat may also be available for: the chuckwalla, *Sauromalus ater*, a Nevada Bureau of Land Management (BLM) Sensitive Species; the silverleaf sunray, *Enceliopsis argophylla*, a Nevada BLM Sensitive Species; the rosy twotone beardtongue, *Penstemon bicolor* ssp. *roseus*, a Nevada BLM Sensitive Species; the Brazilian free-tailed bat, *Tadarida brasiliensis*, a Nevada BLM Sensitive Species; and the Las Vegas bearpoppy, *Arctomecon californica*, a Nevada BLM Special Status Species also protected under Nevada state law (NRS 527.260-.300) as critically endangered. We do not have complete data on various raptors that may also occur in the area; for more information contact Ralph Phenix, Nevada Division of Wildlife at (775) 688-1565. Note that all cacti, yuccas, and Christmas trees are protected by Nevada state law (NRS 527.060-.120), including taxa not tracked by this office.

Please note that our data are dependent on the research and observations of many individuals and organizations, and in most cases are not the result of comprehensive or site-specific field surveys. Natural Heritage reports should never be regarded as final statements on the taxa or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.

Thank you for checking with our program. Please contact us for additional information or further assistance.

Sincerely,

Eric S. Miskow
Biologist/Data Manager

At Risk Taxa Recorded Near the Systems Conveyance and Operations Program Project Area

Compiled by the Nevada Natural Heritage Program for PBS & J

05 February 2008

<u>Scientific name</u>	<u>Common name</u>	<u>Usfws</u>	<u>Blm</u>	<u>Usfs</u>	<u>State</u>	<u>Srank</u>	<u>Grank</u>	<u>Lat</u>	<u>Long</u>	<u>Prec</u>	<u>Last observed</u>
Plants											
<i>Astragalus preussii</i> var. <i>laxiflorus</i>	Littlefield milkvetch					S1S2	G4T2T3	355944N	1144720W	G	1974-05-10
<i>Astragalus preussii</i> var. <i>laxiflorus</i>	Littlefield milkvetch					S1S2	G4T2T3	361003N	1144337W	G	1993-04-01
Reptiles											
<i>Heloderma suspectum cinctum</i>	banded Gila monster	xC2, NL	N;C		YES	S2	G4T4	T22S R64E		S	1990-05
<i>Gopherus agassizii</i>	desert tortoise (Mojave Desert pop.)	LT, SAT	S	T	YES	S2S3	G4	360411N	1144832W	S	2000-09-13
<i>Gopherus agassizii</i>	desert tortoise (Mojave Desert pop.)	LT, SAT	S	T	YES	S2S3	G4	360206N	1144908W	S	1991-05-15
Mammals											
<i>Macrotus californicus</i>	California leaf-nosed bat	xC2	N;C	C	YES	S2	G4	T22S R64E		M	1938

U. S. Fish and Wildlife Service (Usfws) Categories for Listing under the Endangered Species Act:

LT	Listed Threatened - likely to be classified as Endangered in the foreseeable future if present trends continue
x C2	Former Category 2 Candidate, now species of concern
NL	Not Listed (no status) in a portion of the species' range
_SA	Similarity of appearance species

Bureau of Land Management (Blm) Species Classification:

S	Nevada Special Status Species - USFWS listed, proposed or candidate for listing, or protected by Nevada state law
N	Nevada Special Status Species - designated Sensitive by State Office
C	California Special Status Species (see definition S and N)

United States Forest Service (Usfs) Species Classification:

C	Region 5 sensitive species, not yet known from Inyo NF or LTBMU
T	Region 4 and/or Region 5 Threatened species

Nevada State Protected (State) Species Classification:

Fauna:	
YES	Species protected under NRS 501.

Precision (Prec) of Mapped Occurrence:

Precision, or radius of uncertainty around latitude/longitude coordinates:

S	Seconds: within a three-second radius
M	Minutes: within a one-minute radius, approximately 2 km or 1.5 miles
G	General: within about 8 km or 5 miles, or to map quadrangle or place name

Nevada Natural Heritage Program Global (Grank) and State (Srank) Ranks for Threats and/or Vulnerability:

G	Global rank indicator, based on worldwide distribution at the species level
T	Global trinomial rank indicator, based on worldwide distribution at the infraspecific level
S	State rank indicator, based on distribution within Nevada at the lowest taxonomic level
1	Critically imperiled and especially vulnerable to extinction or extirpation due to extreme rarity, imminent threats, or other factors
2	Imperiled due to rarity or other demonstrable factors
3	Vulnerable to decline because rare and local throughout its range, or with very restricted range
4	Long-term concern, though now apparently secure; usually rare in parts of its range, especially at its periphery
5	Demonstrably secure, widespread, and abundant
A	Accidental within Nevada
B	Breeding status within Nevada (excludes resident taxa)
H	Historical; could be rediscovered
N	Non-breeding status within Nevada (excludes resident taxa)
Q	Taxonomic status uncertain
U	Unrankable
Z	Enduring occurrences cannot be defined (usually given to migrant or accidental birds)
?	Assigned rank uncertain

Appendix B

Acronyms and Abbreviations

ACRONYMS AND ABBREVIATIONS

AMSWTF	Alfred Merritt Smith Water Treatment Facility
ARPA	Archaeological Resources Protection Act
BLM	U.S. Bureau of Land Management
BMP	best management practices
BO	Biological Opinion
CAA	Clean Air Act
CCWRD	Clark County Water Reclamation District
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CLV	City of Las Vegas
CNLV	City of North Las Vegas
CO	Carbon Monoxide
COH	City of Henderson
CRC	Colorado River Commission
CWA	Clean Water Act
CWC	Clean Water Coalition
CY	cubic yards
dba	A-Weighted Decibels
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
EO	Executive Order
EOP	emergency outfall pipeline
ESA	Endangered Species Act
ft	feet or foot
HAP	hazardous air pollutants
HDPE	High Density Polyethylene
HPRS	hydroelectric/pressure regulating station
Hz	Hertz
IO	isolated occurrence
KOP	Key Observation Points

kV	kilovolt
LMNRA	Lake Mead National Recreation Area
LOS	Level of Service
m	meters
MBTA	Migratory Bird Treaty Act
MSHCP	Clark County Multiple Species Habitat Conservation Plan
msl	mean sea level
MOA	Memorandum of Agreement
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NDEP	Nevada Division of Environmental Protection
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NNHP	Nevada Natural Heritage Program
NO ₂	Nitrogen Dioxide
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRMT3	North River Mountains Tunnel 3
NRS	Nevada Revised Statutes
NRHP	National Register of Historic Places
O&M	operations and management
OHWM	ordinary High Water Mark
Pb	lead
PEPC	Planning, Environment, and Public Comment
PL	Public Law
PM ₁₀	Particulate Matter less than 10 microns in diameter
ppm	parts per million
PSD	prevention of significant deterioration
Reclamation	Bureau of Reclamation
RMLT	River Mountains Loop Trail
RMT3	River Mountains Tunnel 3
ROD	Record of Decision
ROW	right of way

SCIRR	Six Companies Inc. Railroad
SCOP	Systems Conveyance and Operations Program
SHPO	State Historic Preservation Office
SIP	state implementation plan
SNWA	Southern Nevada Water Authority
SO ₂	Sulfur Dioxide
TRB	Transportation Research Board
US	United States
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
VCS	valve control structure
VOC	volatile organic compounds
VRM	Visual Resource Management
WOUS	Waters of the United States